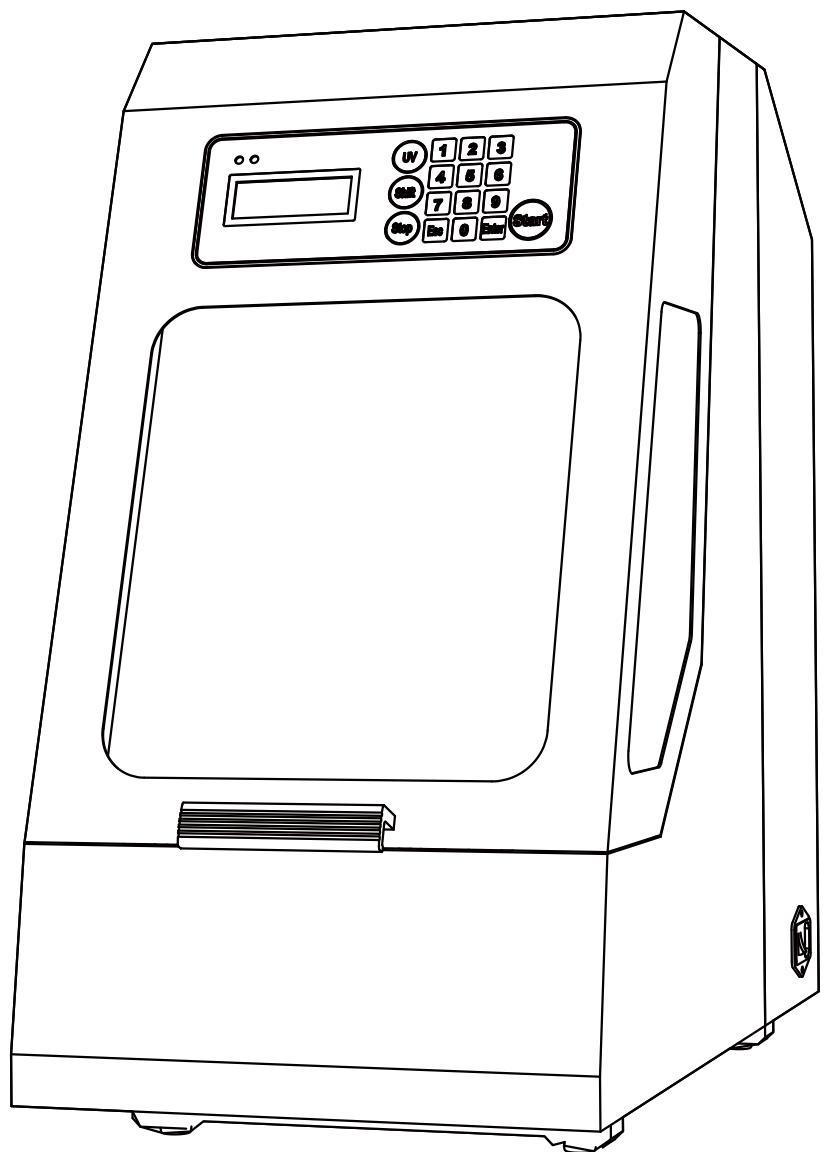




RBC Bioscience

MagCore® Compact Service Manual



Safety Precautions

Before use

These **WARNINGS** and **CAUTIONS** are intended to protect you and other persons from injuries and damages. To ensure safe operation, please follow them carefully.



CAUTIONS

Risk Of Electric Shock Do Not Open

CAUTION:

To Reduce The Risk Of Electric Shock, Do Not Remove Cover (Or Back).
No User-serviceable Parts Inside. Refer Servicing To Qualified Service Personnel.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



Be aware of contamination by contagious specimens.



High temperature warning!!

DO NOT touch the heating block with this sticker attached, it may cause serious burning injuries.

CAUTION:

1. Handle the power supply cord carefully

Do not damage or deform the power supply cord. If it is damaged or deformed, it may cause electric shock or malfunction when used. When removing from wall outlet, be sure to remove by holding the plug attachment and not by pulling the cord.

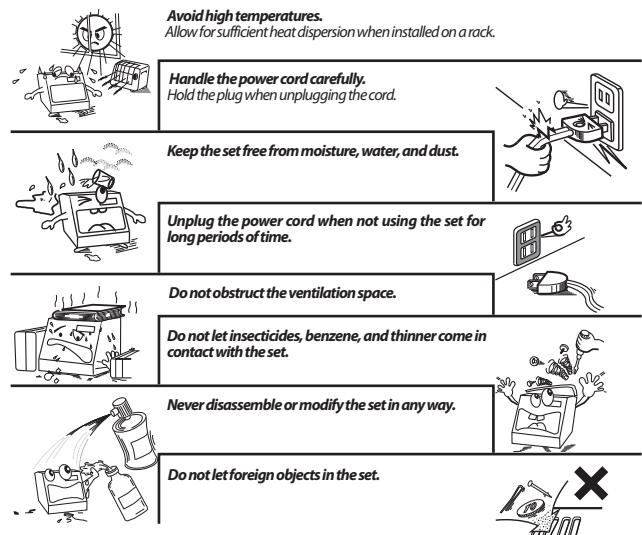
2. Do not open the top cover

In order to prevent electric shock, do not open the top cover.

3. Do not place anything inside

Do not place metal objects or spill liquid inside the MagCore® System. Electric shock or malfunction may result.

Note On Use:



SAFETY INSTRUCTIONS

- Read Instructions** – All the safety and operating instructions should be read before the product is operated.
- Retain Instructions** – The safety and operating instructions should be retained for future reference.
- Heed Warnings** – All warnings on the product and in the operating instructions should be adhered to.
- Follow Instructions** – All operating and use instructions should be followed.
- Cleaning** – Unplug this product from the wall outlet before cleaning. Only allow to use 75% of EtOH to clean the surface of instrument.
- Attachments** – Do not use attachments not recommended by the product manufacturer as they may cause hazards.
- Water and Moisture** – Do not use this product near water – for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.
- Accessories** – Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
- Ventilation** – Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
- Power Sources** – This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.
- Grounding or Polarization** – This product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
- Power-Cord Protection** – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.
- Lightning** – For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
- Overloading** – Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.
- Object and Liquid Entry** – Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
- Servicing** – Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- Damage Requiring Service** – Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - When the power-supply cord or plug is damaged,
 - If liquid has been spilled, or objects have fallen into the product,
 - If the product has been exposed to rain or water,
 - If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation,
 - If the product has been dropped or damaged in any way, and
 - When the product exhibits a distinct change in performance – this indicates a need for service.
- Replacement Parts** – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
- Safety Check** – Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
- Heat** – The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products that produce heat.

Specification

Model	Compact
System Method	Cellulose coated magnetic beads
System Components	1. Pipetting Unit: Dispensing, transferring, X-Y two axis movements. 2. Electric Control: Internal microprocessor. 3. UV Light: Power 5W, life duration >1,000 Hrs. 4. Heating Block: RT~100°C. 5. Display Screen: 3 inches LCM Screen with keypress Panel 6. Accessories: T-Rack, Cartridge Rack, Empty Cartridges, Tip/Holders, Sample Tube, Microcentrifugr Tube, Syringe O-ring and Grease.
Power Supply	Voltage: AC 100-240V; Frequency: 50/60Hz; Power Consumption >1.0KVA
Dimension	W350XD660XH680 (mm) W13.79XD25.98XH26.77 (inches)
Net Weight	50kg/110lbs

Operating Parameters

Processing Capacity	1~8 samples per batch
Processing Time	30-70 minutes (depends on sample type and method)
Sample Volume	200µl/400µl/1,200µl
Elution Volume	60µl/100µl/150µl/200µl
Yield	Average 6µg Genomic DNA from 200µl human whole blood
Purity	O.D. 1.8-2.0 A ₂₆₀ /A ₂₈₀ ratio

Operating Environment

Temperatures allowed during transportation storage packaging	15°C ~ 35°C
Temperatures allowed during operation	18°C to 30°C
Pollution Degree	Indoor

Applications

Whole Blood (200µl/400µl), Viral Nucleic Acid (DNA/RNA), Tissue Genomic, Plant Genomic DNA, Bacteria, Cultured Cells, Total RNA, Large volume whole blood (1,200µl)

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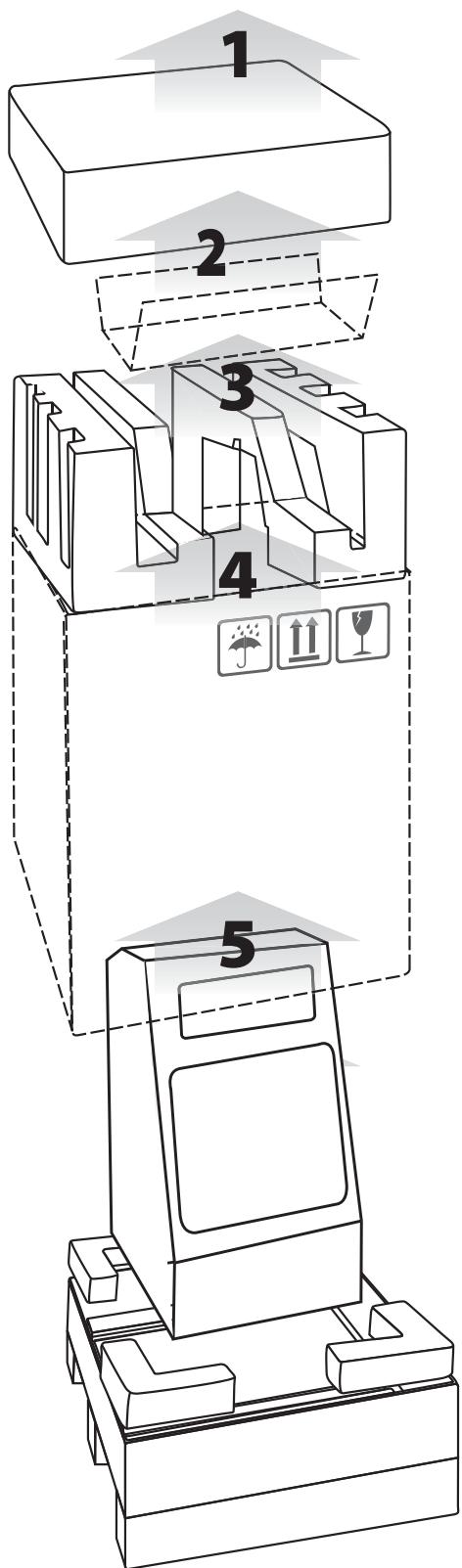
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Trouble Shooting Guide

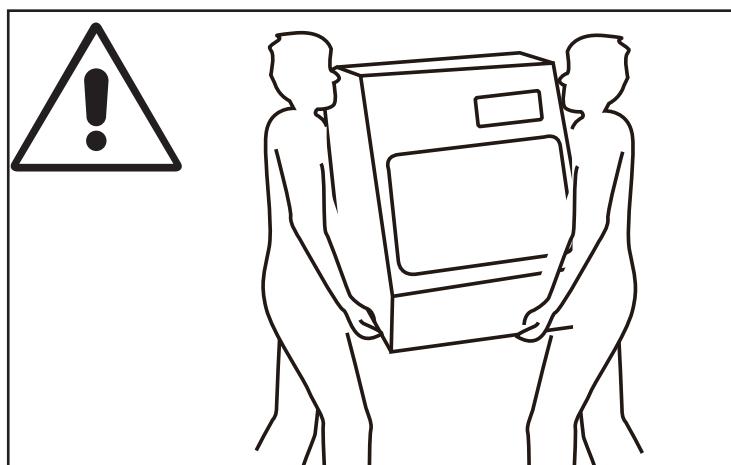
Attachment

1. Package Contents

1.1 Package



- 1 Open the package cover.
- 2 Remove accessories.
- 3 Remove the bump buffer.
- 4 Remove outer carton case.
- 5 Take out of the machine.



MagCore®Compact has a weight of 70 kg(155lb). 2 people are required to lift the MagCore®Compact safely.

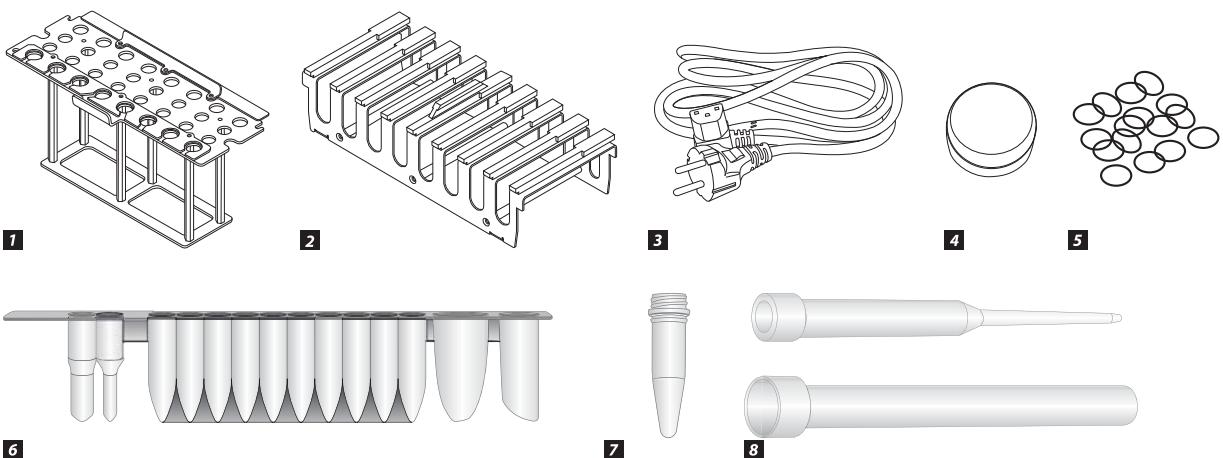


Please put MagCore®Compact on a solid worktop table without pulley. Do not place on the same table of other facilities which need to be kept away from vibration.



Packaging materials are recyclable.
Recommends to keep the package for future transportation or movement.

1.2 Accessories

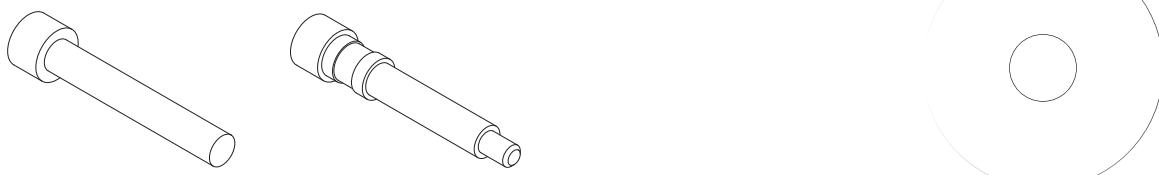


Check that the following parts are included in addition to the main unit:

1	T-Rack.....	1	2	Cartridge Rack.....	1	3	Power Cable.....	1	4	Lubricating silicon grease.....	1
5	O-Rings.....	8	6	Cartridge.....	32	7	Sample/Elution Tube.....	32	8	Tip/Tip Holder.....	32

Accessory No: 6, 7, 8 are installation tools, please keep clean for permanent use.

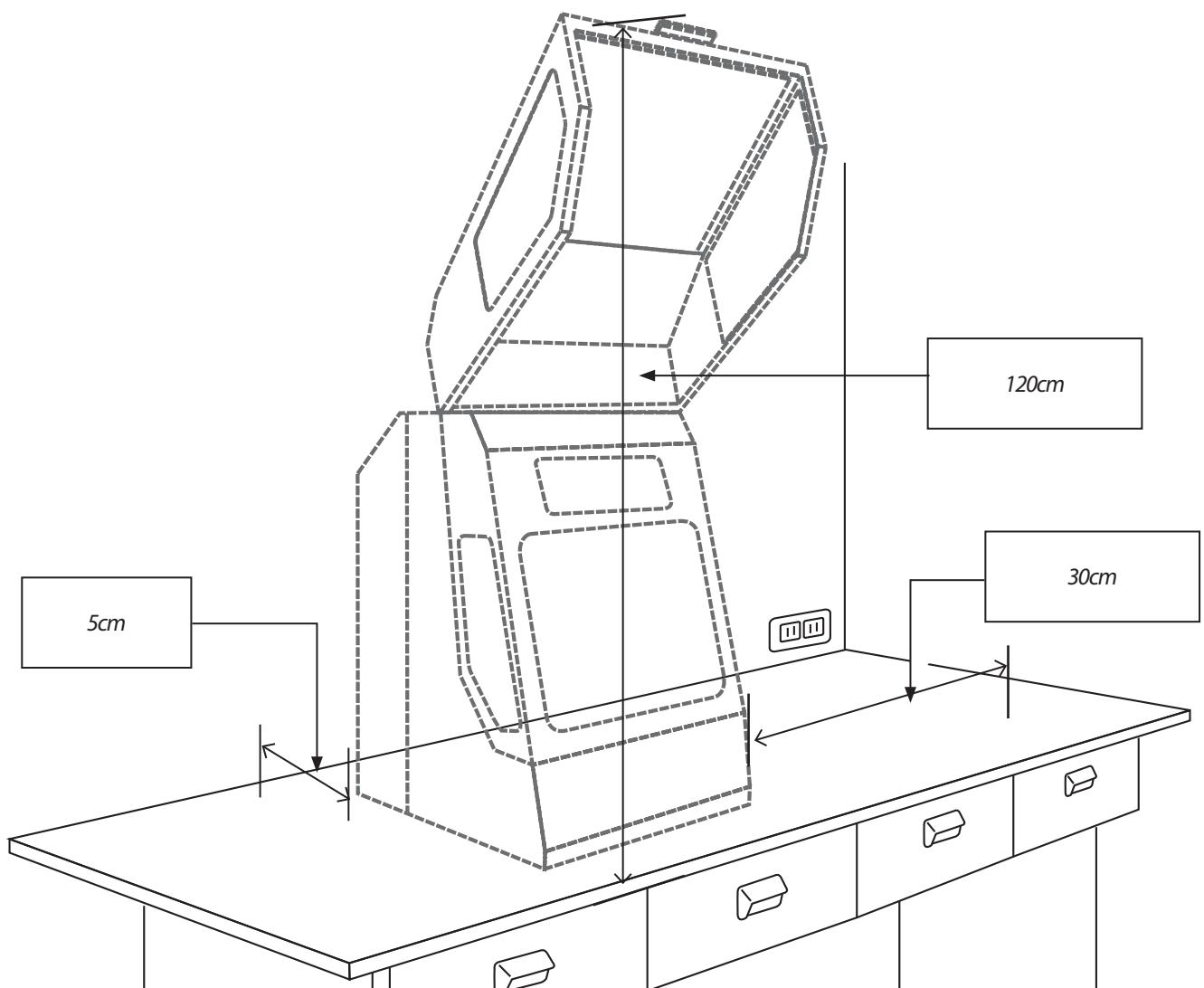
1.3 Engineer Tools



1	Axis Teaching Tools.....	2	2	Syringe Teaching Tools.....	2	3	RS232 To USB Converters.....	1	4	Program CD	1
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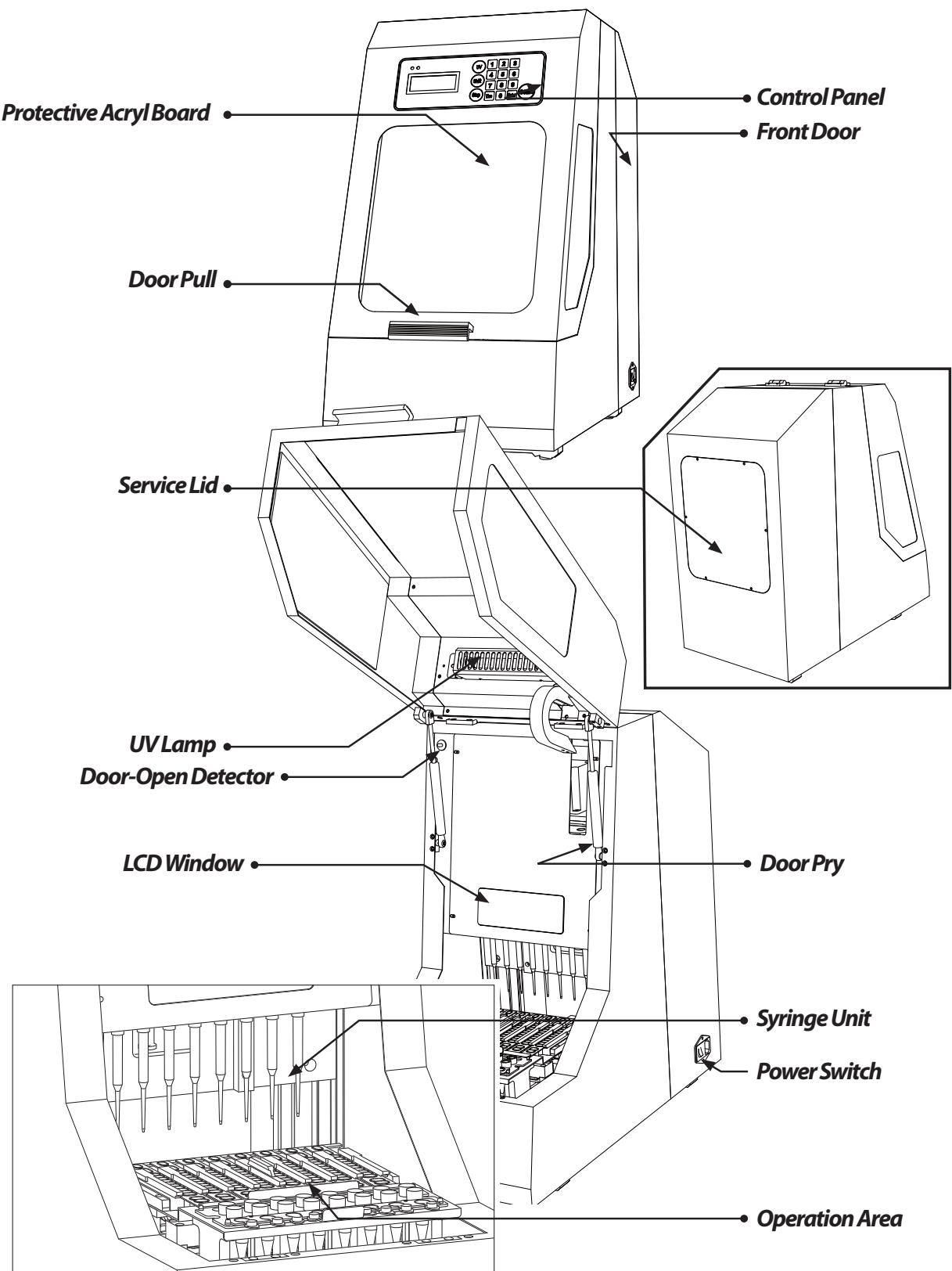
2. Installation

2.1 Before Install

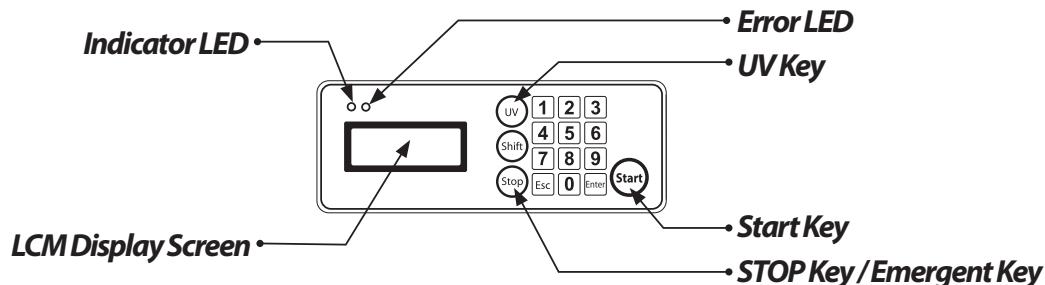


Before installation, please find a location of bench-top close to electrical outlets, and remain enough space for machine installation and ventilation.

2.2 Compact System Overview



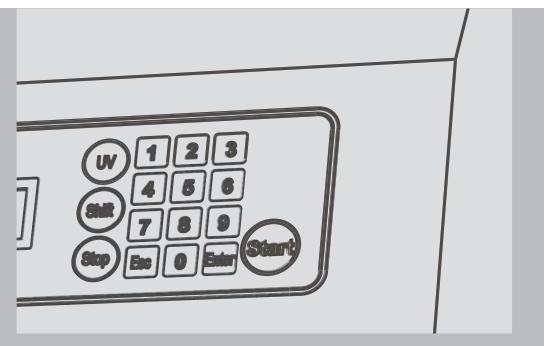
2.3 LCM Display Screen and Keypress Panel



MagCore® Compact provides a touch button keypad for you to communicate with your instrument. The number keys give users to input Cartridge Code which specified on the Reagent Cartridge to run built-in program automatically, or to select desired volumes at start-up sample and final elution steps.

LCM Display Screen which with sapphire background light, shows clear information that the MagCore® Compact is currently performing.

Special function of buttons described as:



UV



Perform UV sterilization after handling contagious specimens.

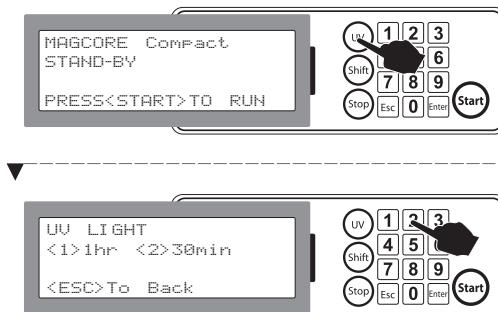
UV Sterilization

UV button is designed to turn on UV Lamp while your MagCore® Compact needs to be sterilized after running contagious samples.

Procedure

Turn on power switch of MagCore® Compact, or after program completed and return back to "Stand-By" condition.

LCM display screen shows "Stand-By".



Press UV button to proceed UV sterilization with 1hr/30 mins of time options.
Esc: Back to "Stand-By" menu.

UV lamp actives and count down with selected time at minutes.

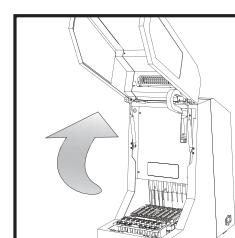
MagCore® Compact will go back to "Stand-By" menu once UV sterilization procedure completed.

Emergency Stop



Stop button is designed for going back to "Stand-By" menu at program completed, or for **EMERGENT STOP** use.

In case of emergency, press "STOP" button at anytime. LCM display screen shows warning sign, Red Indicate LCD lights up and a beep sound can be heard.

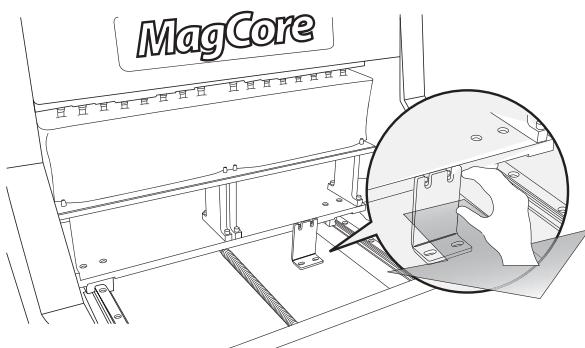


If the front door was opened during program running, MagCore® Compact stops all mechanical movements immediately due to safety considerations.

Shift

Shift button is designed for machine calibration
DO NOT execute this program without trained engineer aside.

2.4 Install MagCore® Compact

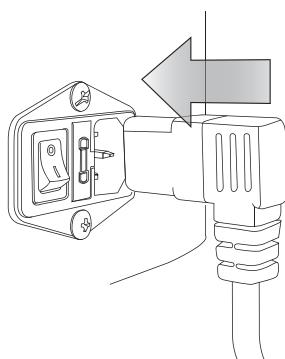


Proceed installation procedures after placing MagCore® Compact on a solid bench-top.

Open the front door and use philip screw driver to loose and take out the L-Block.



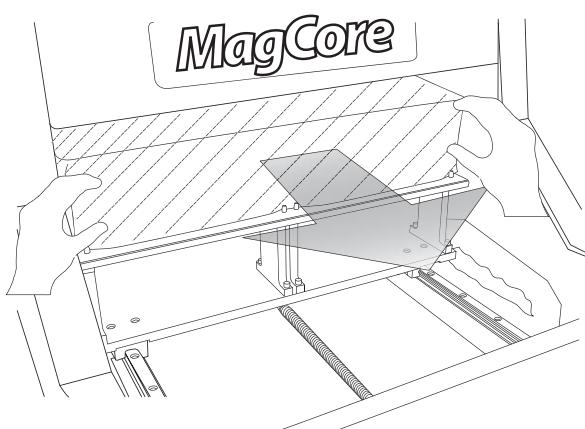
Please retain the L-Block and screws, to relocate for future move process or to fixed machine.



Confirm the outlet voltage is **100v to 240v** Keep hands dry and make sure that the machine remain switch-off while insert into the socket then turn on the powerswitch.

Connect power socket and turn on the power.

2.5 Remove bump buffer



After power on, LCM shows "**STAND-BY**", then press Shift for FUNCTION menu



Select (2) PISTON, machine will retreat bump buffer automatically.

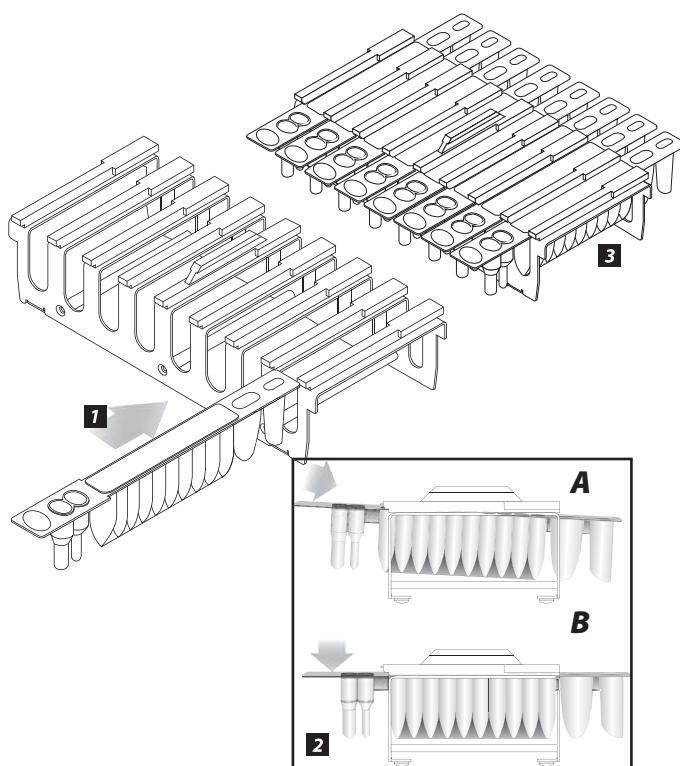


Press ECS twice to go back to STAND-BY menu. Complete instal procedures.

Repack bump buffer

1. Plug in power cable, then turn on power switch.
2. Push back the plateform back (without T-rack and cartridge rack) to position where L-Block can be fixed.
3. Use Philip screw drive to fix 4 screws to L-Block.
4. Place the bump buffer on the cartridge plateform
5. Pull down the Syringe plateform to secure bump buffer.
6. Turn off power.

2.6 Insert Cartridge



1 Insert MagCore® Compact Viral Nucleic Acid cartridge into Cartridge Rack following arrow point directions.

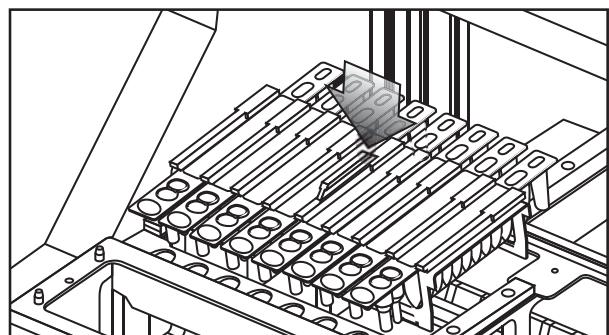
2 A. Slide MagCore® Compact cartridge into Cartridge Rack to the end with slight downward angle.

B. Press down the cartridge to interlock position under the overhang part of Cartridge Rack. A click sound can be heard when it is locked correctly.

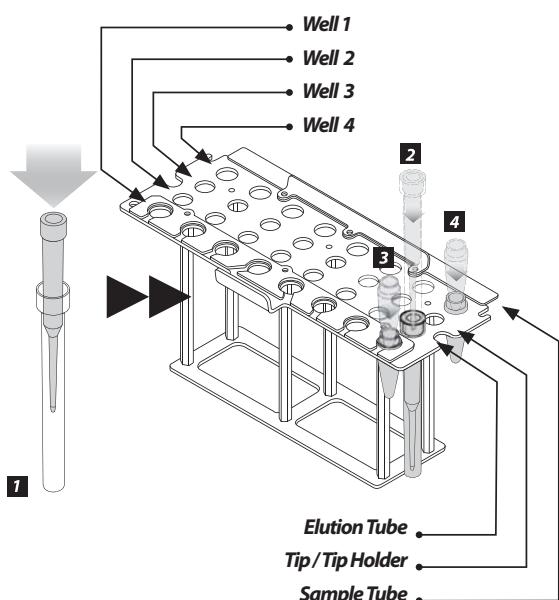
3 Load as many cartridges as sample runs. Capacity for each

4 Cartridge Rack is 8, up to 16 samples for two Cartridge Racks can be performed at one time on MagCore® Compact.

Instal the cartridges loaded Cartridge Rack into inner operation area of the MagCore® Compact and lock firmly.



2.7 Setup Tube, Tip and Tip Holder



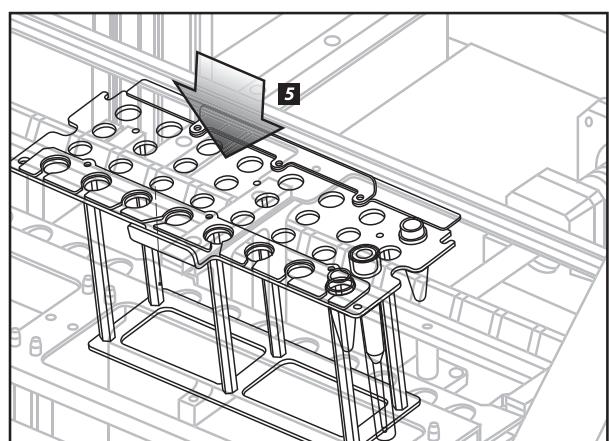
1 Put Tips into Tip Holders.

2 Set the Tip/Tip Holder onto hole 2 of T-Rack.

3 Place provided Elution (Eppendorf) Tube or other types of tube into hole 1 of T-Rack as final purified DNA collection tube.

4 Set the Sample Tube onto hole 4 of T-Rack.

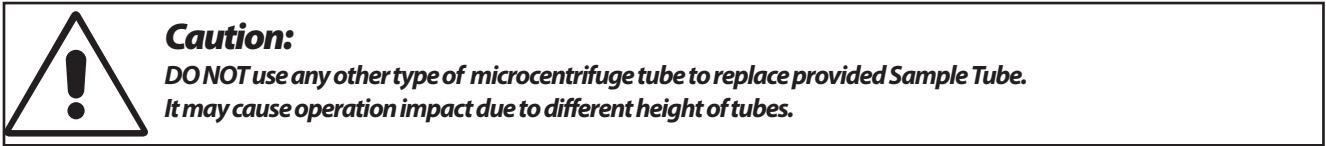
5 Instal the Tip/Holder and Sample/Elution Tubes loaded T-Rack into outer operation area of the MagCore® Compact and lock firmly.



Please refer to MagCore® Kit User Menu for appropriate wells to setup Tip and Tube.

Caution:

DO NOT use any other type of microcentrifuge tube to replace provided Sample Tube.
It may cause operation impact due to different height of tubes.

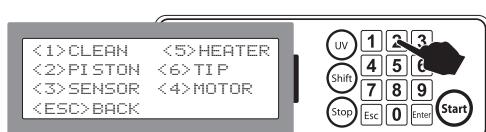


2.8 System Test

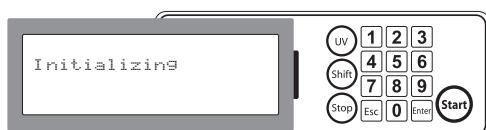
1. Apply 16 Tips / Tip Holders and Sample/Elution Tubes to T-Rack. Add 1ml of water to each Sample Tubes then close the front door.



2. Press Shift to enter FUNCTION Menu.



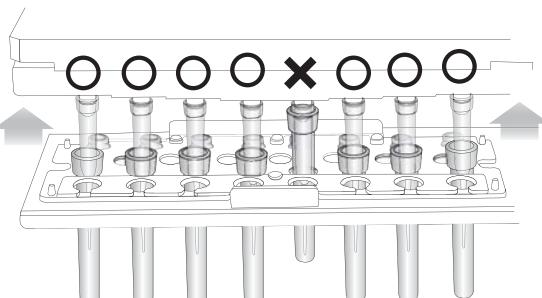
3. Select (2) PISTON for Tip taking and Syringe air-tight tests.



4. Press START to go.

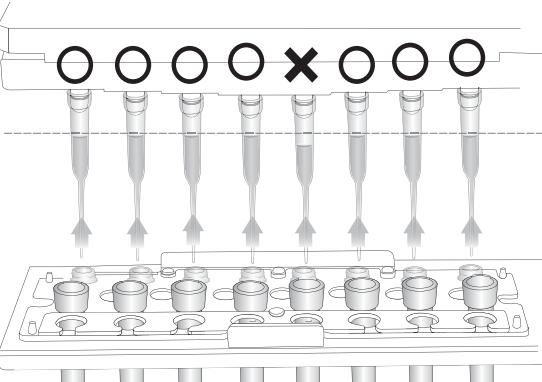


2.8.1 Test 1



Machine taking up Tips, please check whether the Tips move smoothly. If you observe a Tip Holder stuck, please press the STOP button immediately to stop and remove the jammed Holder. Replace the Tip/Tip Holder then run the procedure again. If the problem persists, contact your local dealer for engineering helps.

2.8.2 Test 2



Tip will absorb water from Sample Tube and pause for 15 seconds, please check the liquid level of each columns are at same horizontal. If leakage situation is observed, press STOP button to stop and replace the leaking Tip and O-ring, then run the test again. If the problem persists, contact your local dealer for engineering helps.

2.8.3 Test 3

Return Tip Please check whether it is smooth or not at returning Tips.

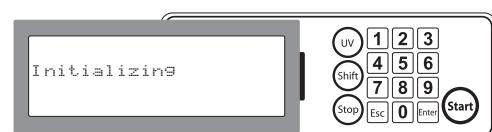
2.9 Start Programs

Install all necessary accessories and apply your specimen to MagCore®.

Press START



Select Sample Volume.

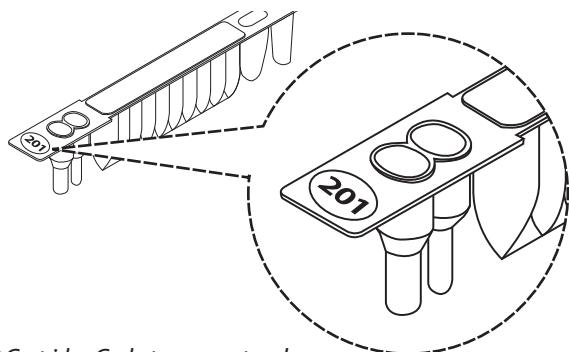


Confirm your input Sample Volume.
Press Enter for next page, Press ESC for back to Stand-By page.

After press Start button, machine runs program of calibration, initialize to move all axis to original factory positions.



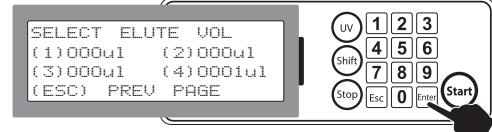
At this step prepare racks to operation area. After racks loaded then press Enter to next page for elution volume selection.



Input Cartridge Code to run protocol.
Cartridge Code is shown on your Reagent Cartridge and the cover of user manual.



Above CODE is for demonstration purpose, please refer to the kit you purchase for real workshop.



Select final elution volume.



MagCore® Compact in process of selected protocol at this step. The Green Indicat LCD lights up and Heating Block starts to heat up to 65°C for Lysis Step.

During MagCore® Compact is under program running, the "MagCore" LCD lights up at all times.

DO NOT open the door at this moment, it causes emergent stop and you might lose your samples by machine interruption.

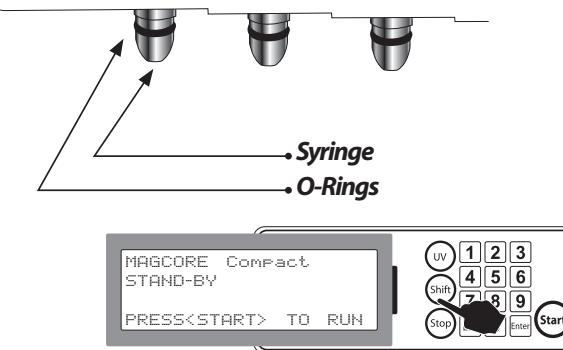
Confirm your input code again and press Enter to next page for sample volume selection.



While program finished, a beep sound can be heard. and green Indicate LCD light went out.

3. Easy Maintenance

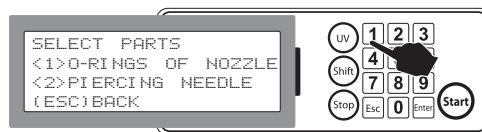
3.1 Replace O-Rings



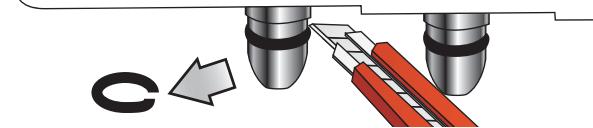
Under STAND-BY Menu, press Shift to enter FUNCTION menu.



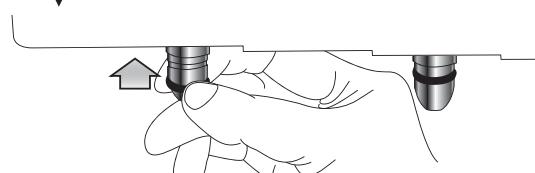
Select (1) CLEAN to enter next step.



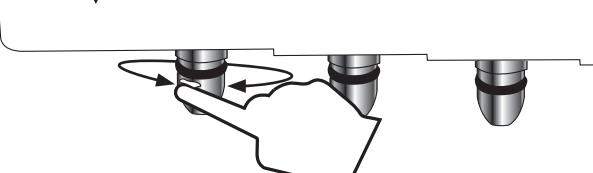
Select (1) for O-ring replacement.



Use a sharp blade to cut off old O-ring.



Apply with new one.



Use supplied lubricating oil to rub a thin layer around O-Rings, press ESC to back to STAND-BY menu and complete replacement.

3.2 Clean Piercing Needles



The Piercing Needles are very sharp, be careful for possible stabbing wounds to the hand.



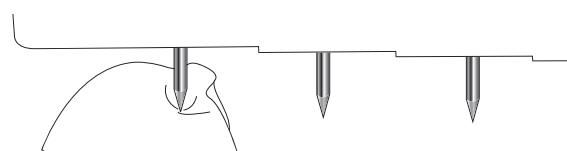
Under STAND-BY Menu, press Shift to enter FUNCTION menu.



Select (1) CLEAN to enter next step.



Select (2) for Piercing Needles clean up.



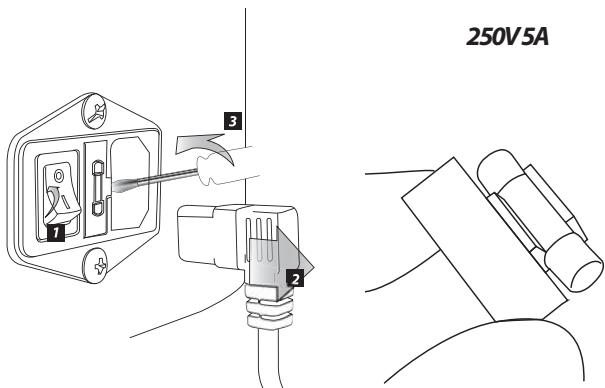
When Piercing Needles are positioned and stopped, use 70% alcohol with cotton paper to clean. Press ESC to go back to STAND-BY menu and complete cleaning procedures.



Machine is only allowed to clean with 70% alcohol. DO NOT use any type of organic solvents for cleaning.

3.3 Replace Fuse

3.3.1 Replace Fuses (inside Power Inlet)



Only use specified fuse for replacement, using higher amper fuse will cause server danger of burning.

Equipment

Flathead screwdriver

Procedure

- 1 Remove the Fuse Holder using a flathead screwdriver.
- 2 Replace the Fuse when broken with a new fuse according to the specification written on the Power Inlet (5A).

3.3.2 Replace Fuses (CPU Board)



Turn off the power and remove power socket before opening the Service Lid. Touch internal parts may cause electric shock hazards.



Take electrostatic protective measures while you need to touch the CPU board.

Procedure

1 *Removing Service Lid*

2 *Replace a Fuse(s) when broken with a new fuse according to the specification written on the board.*

Each fuse is placed in the circuit as follows:

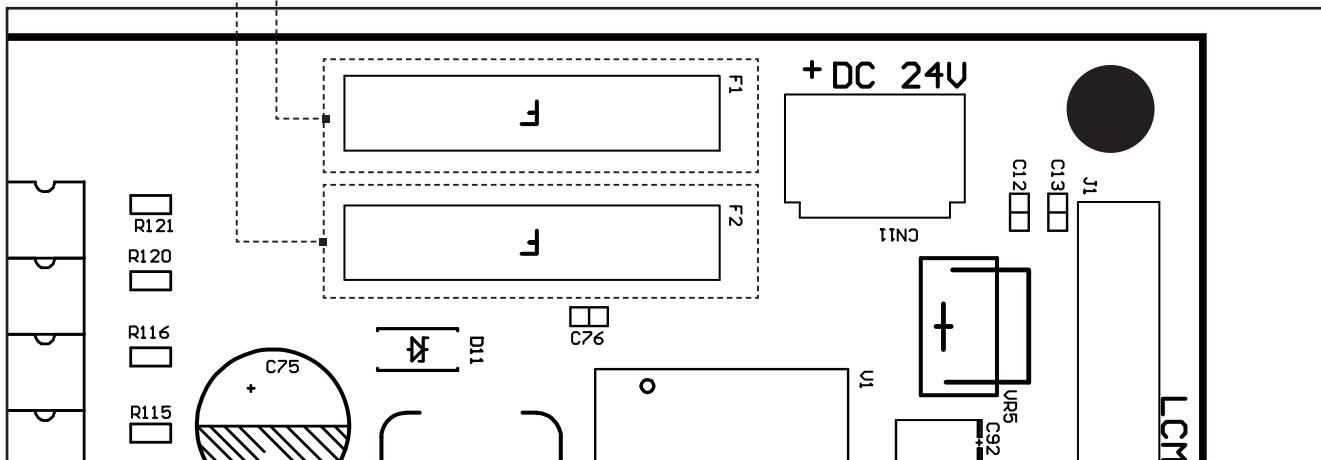
F1: 5A CPI Board Power Indicator Four Axes Pulse Motor Driver Board

F2:05A Four Axes Pulse Motor Driver Board (Excitation ON/OFF)

12. 0.5A Four AXES1 use Motor Driver Board (Excitation ON/OFF)

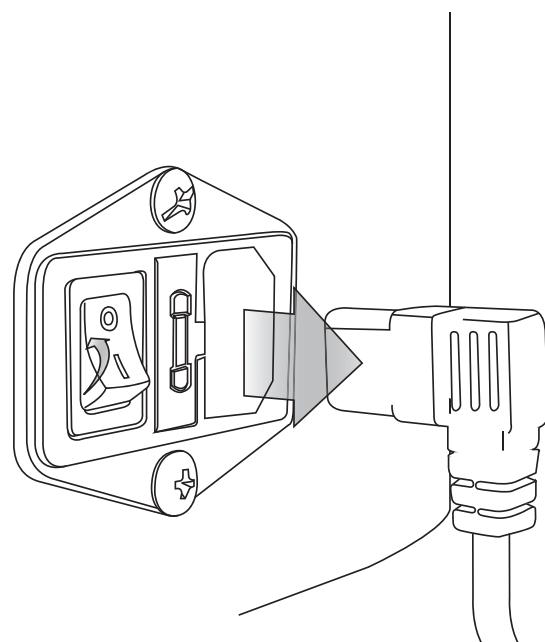
5A Fuse

► **0.5A Fuse**



Caution!

***Turn off the power and remove power socket
Before processing advanced maintenance !***

***Caution!***

***All advanced maintenance must be performed
by trained Engineers !***

4. Advanced Maintenance

4.1 Service Lid And Front Lid

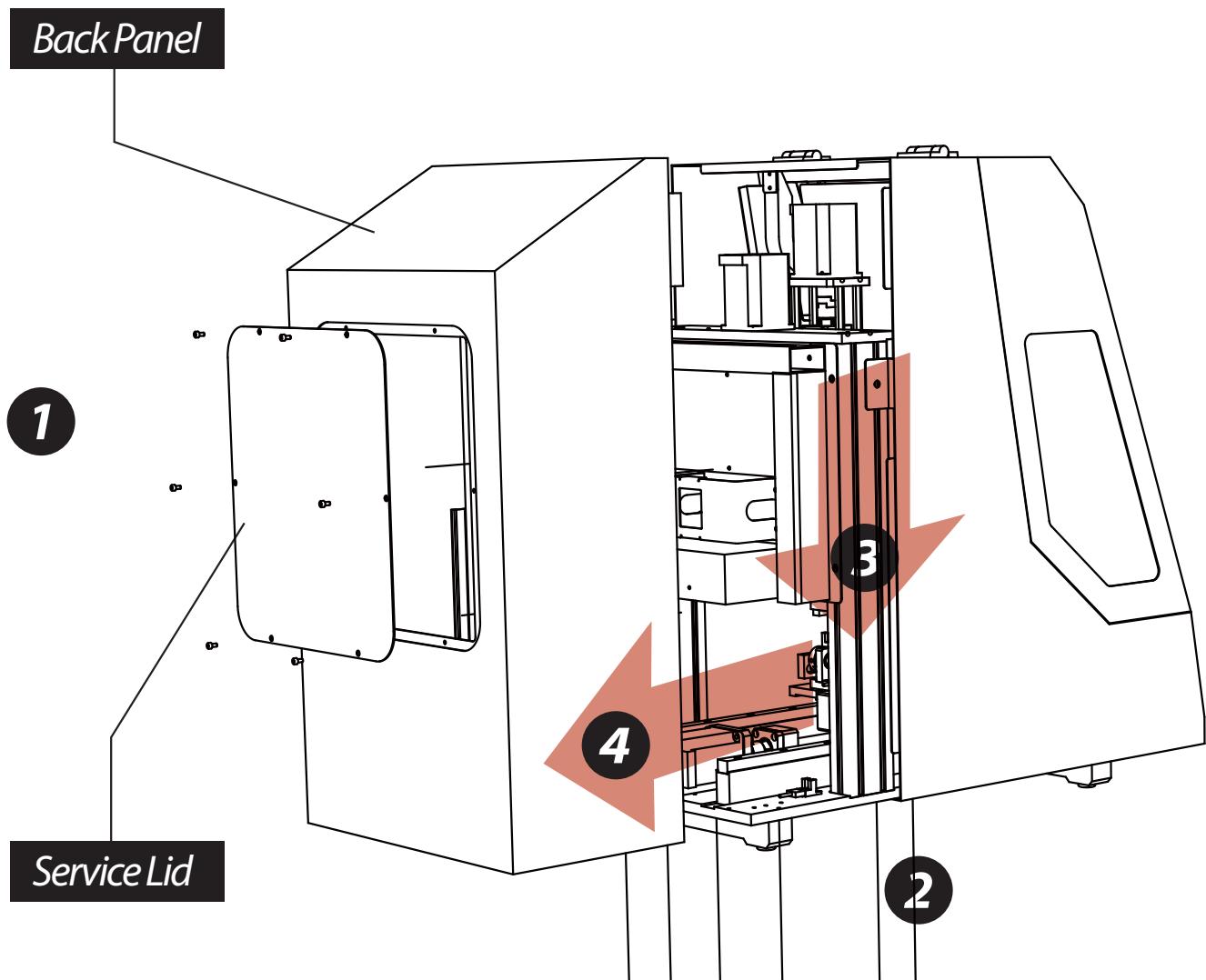
4.1.1 Removing Service Lid And Back Panel

Equipment

Hex Wrench (2.5 mm), Hex Wrench (3mm)

Procedure

- 1 Remove six Fixing Screws on the Compact system's Back Panel. Remove Service Lid from Back Panel.
- 2 Remove the eight Back Panel Fixing Screws under the Compact System's main body.
- 3 Push down Back Panel. Hooks connecting with Front Cover are automatically released.
- 4 Pull back Back Panel.
- 5 Remove the Back Panel from the main body.



4.1.2 Removing Front Door and Front Lid

4.1.2.1 Removing Front Door Connectors

Procedure

The Service Lid needs to be removed in advance, before removing the Front Door Connectors.

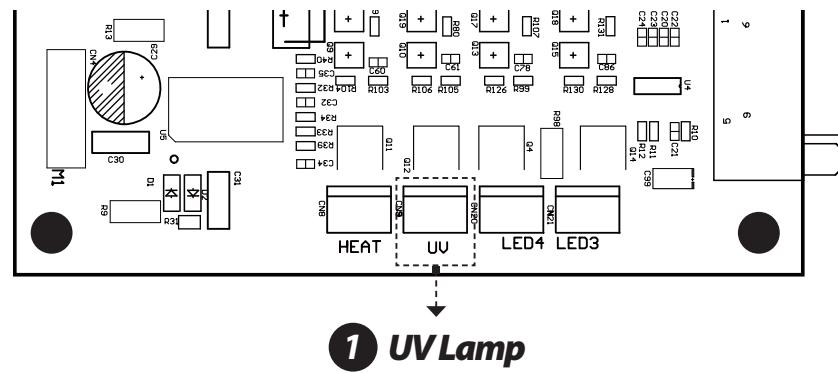
When removing the Service Lid, refer to "4.1.1 Removing Service Lid" and follow the instructions below.

1 Disconnect the UV Lamp Power Connector from the UV Lamp Ballast Output Wire.

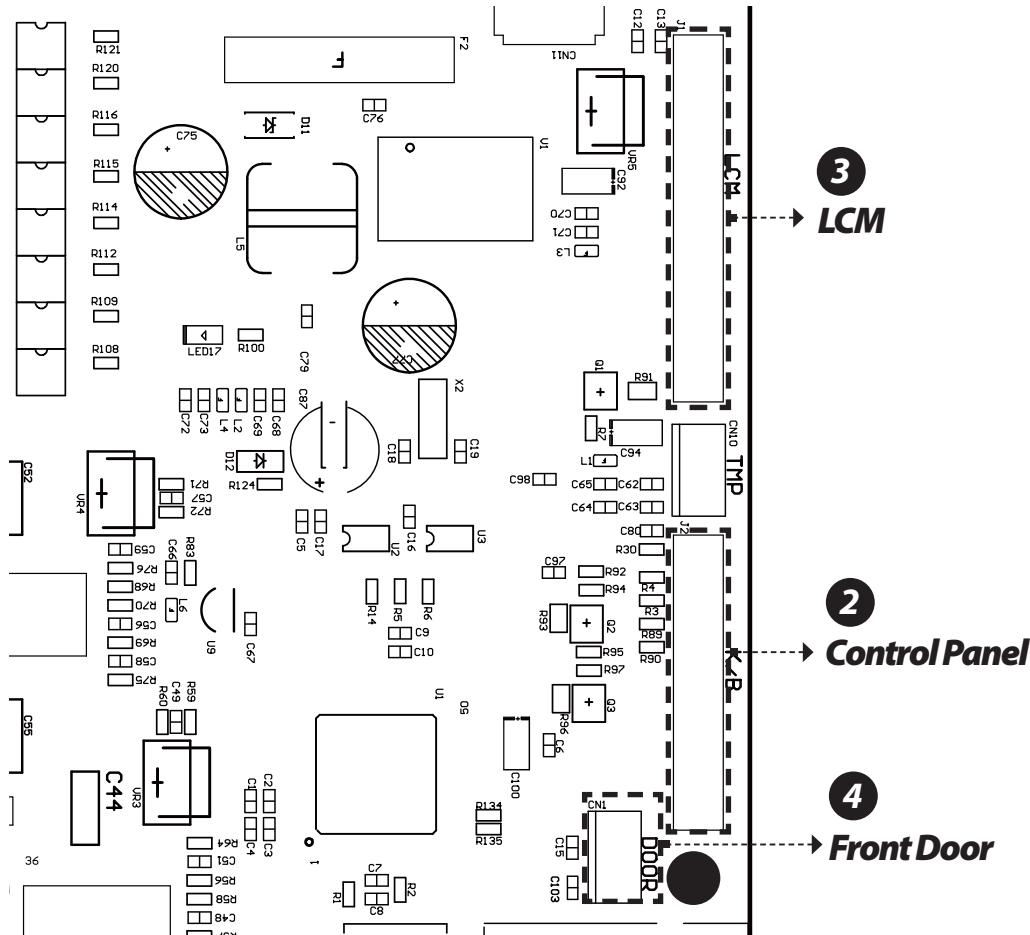
2 Disconnect the Operation Panel Connector from the CPU Board.

3 Disconnect the Panel Sheet Connector from the CPU Board.

4 Disconnect the Front Door Safety Switch Connector from the CPU Board.



1 UV Lamp



3 LCM

2 Control Panel

4 Front Door

4.1.2.2 Removing Front Lid

The Service Lid needs to be removed in advance, before removing the Back Panel.

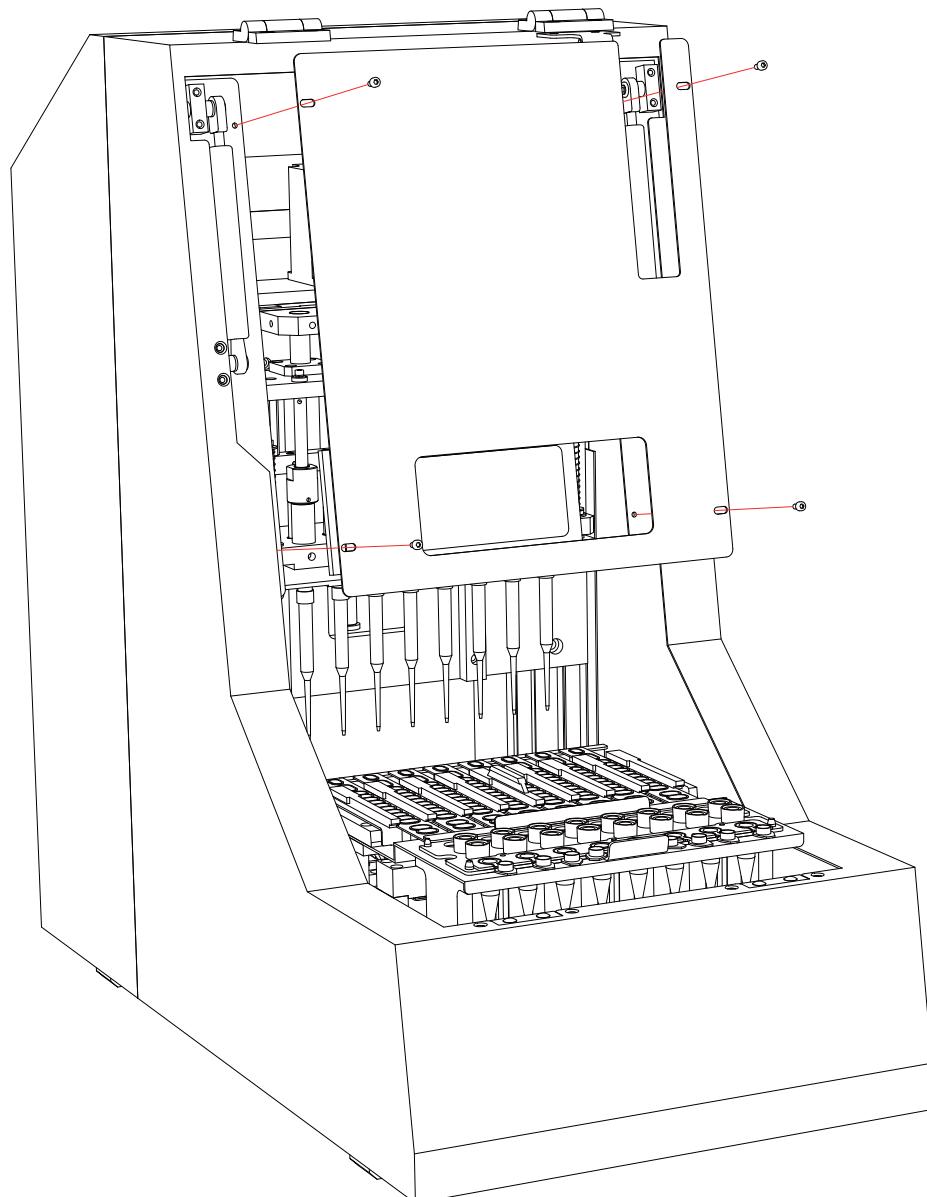
When removing the Service Lid, refer to "4.1.1 Removing Service Lid" and follow the instructions below.

Equipment

Hex Wrench (2.5mm)

Procedure

- 1 Disconnect the Display Lamp Power Connector from the Light Extension Wire which is connected to the CPU Board.
- 2 Remove the four Front Lid Fixing Screws on the Front Cover.



4.1.2.3 Removing Front Door

The Front Lid and the Front Door Connectors need to be removed in advance, before removing the Front Door.

When removing the Front Lid refer to "4.1.2.2 Removing Front Lid."

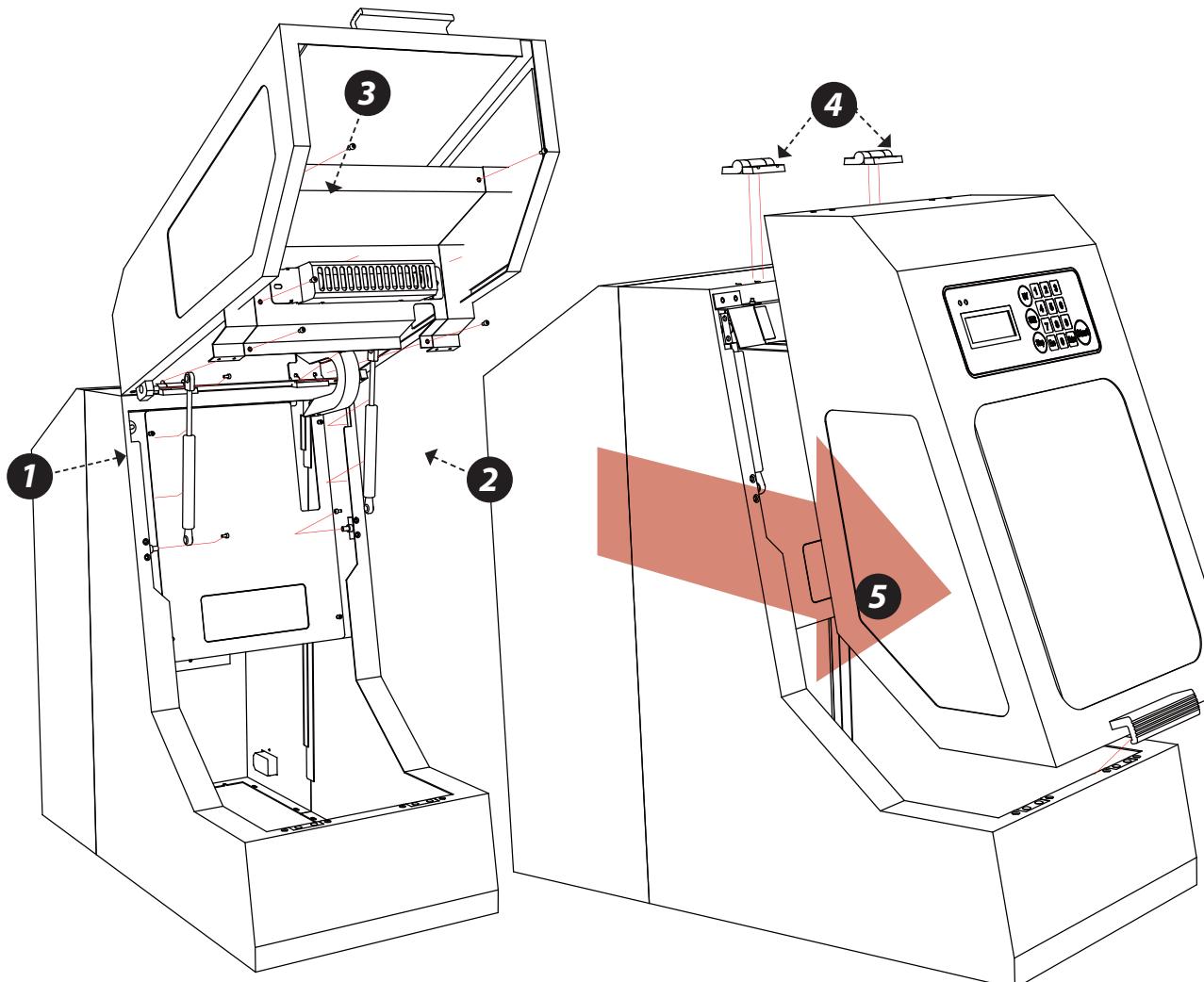
When removing the Front Door Connectors refer to "4.1.2.2 Removing Front Lid," and follow the instructions below.

Equipment

Hex Wrench (2.5mm), Hex Wrench (3mm, 4mm)

Procedure

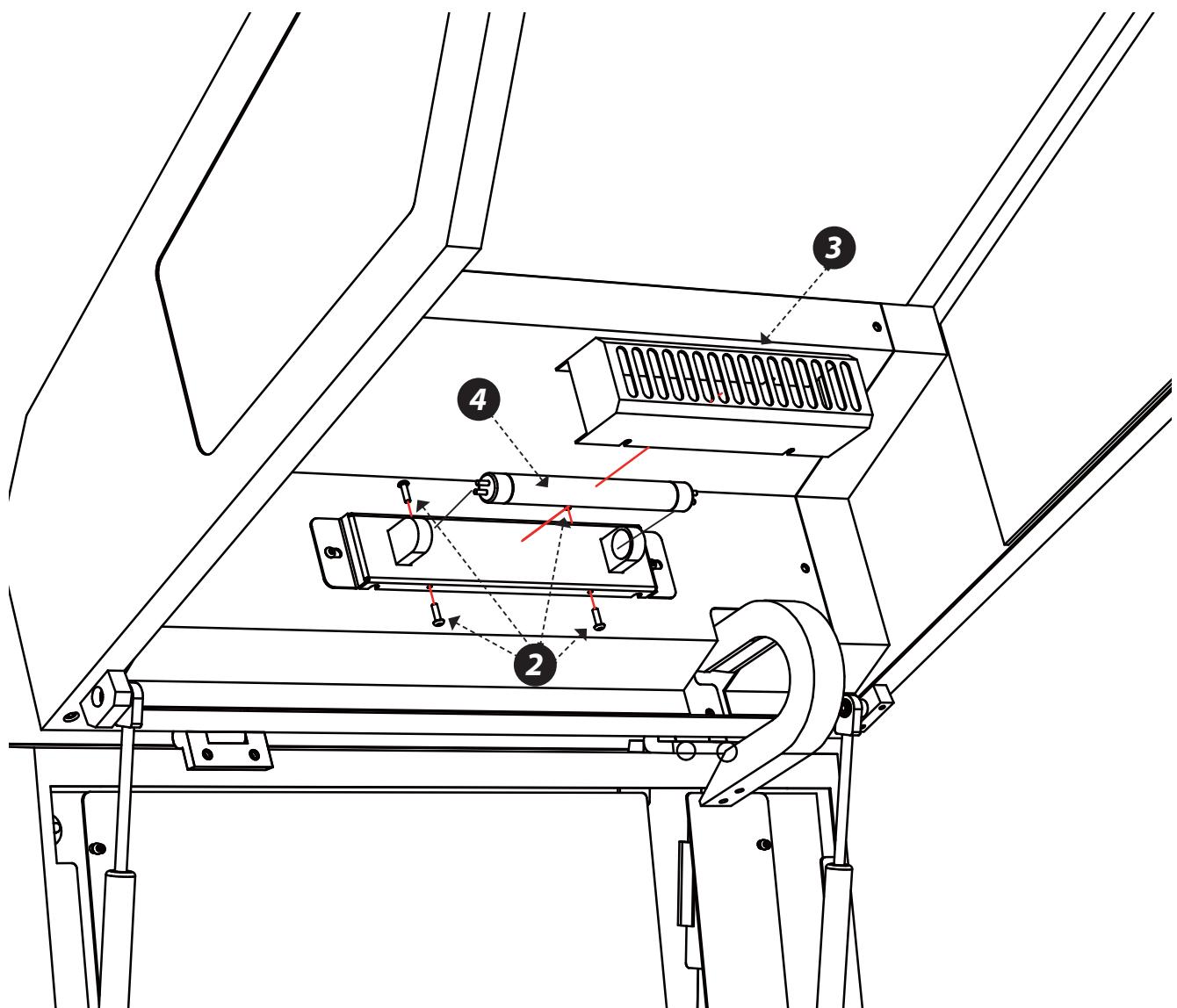
- 1 Remove the two Fixing Screws on the left side Gas Spring under the Front Cover. Note: Use Hex Wrench (3mm)
- 2 Remove the two Fixing Screws on the right side Gas Spring under the Front Cover. Note: Use Hex Wrench (3mm)
- 3 Remove the six Fixing Screws on the Operation Panel Cover under the Front Door.
- 4 Remove the four Fixing Screws from the two hinges under the Front Cover, and the Cable Bear Hanger is automatically released.
Note: Use Hex Wrench (4mm)
- 5 Remove the Front Door from the Front Cover.



4.2 UV Lamp

4.2.1 Replace UV Lamp

- 1 Open the Compact System's Front Door.
- 2 Remove the four Fixing Screws on both sides of the UV Lamp Cover.
- 3 Remove the UV Lamp Cover with care not to damage the UV Lamp.
- 4 Remove the UV Lamp from the UV Lamp Bracket.
- 5 Replace the UV Lamp Cover and the four Fixing Screws.



4.2.2 Replacing UV Lamp Ballast

The Service Lid needs to be removed in advance, before replacing the UV Lamp Ballast.

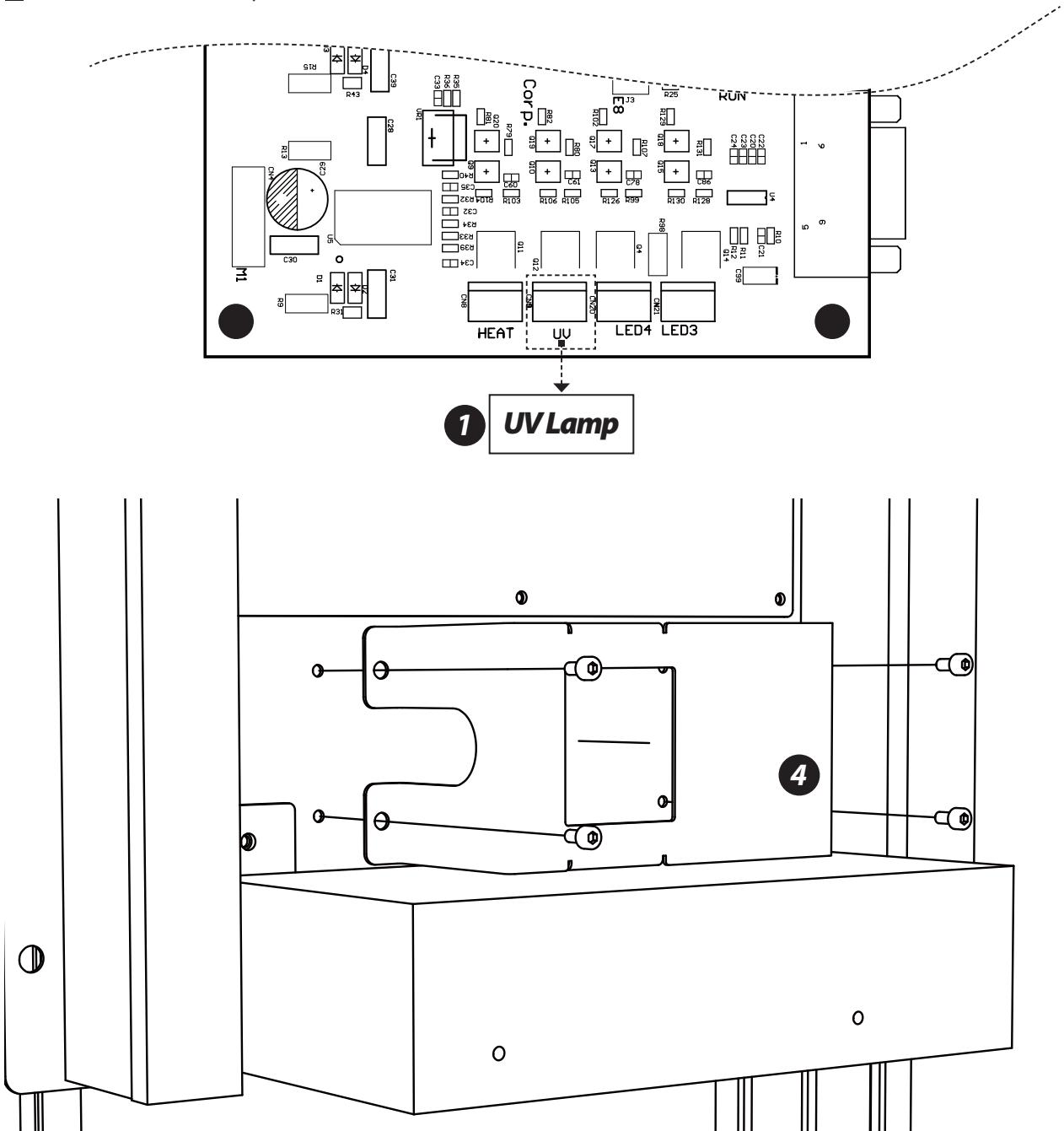
When removing the Service Lid refer to "4.1.1 Removing Service Lid," and follow the instructions below.

Equipment

Phillips Screwdriver (#2)

Procedure

- 1** Disconnect the Power Connector from the CPU Board Power Distribution refer to "6.1 CPU Board".
- 2** When removing the Operation Panel Cover refer to "4.1.2.3 Step 3", Remove the six Fixing Screws on the Operation Panel Cover under the Front Door.
- 3** Disconnect the UV Lamp Power Connector from the UV Lamp Ballast Output Wire.
- 4** Remove the four UV Lamp Ballast Fixing Screws.
- 5** Reassemble the new UV Lamp Ballast in the inverse order.



4.3 Panel Sheet

4.3.1 Replacing Panel Sheet

The Operation Panel Cover needs to be removed in advance, before replacing the Panel Sheet.

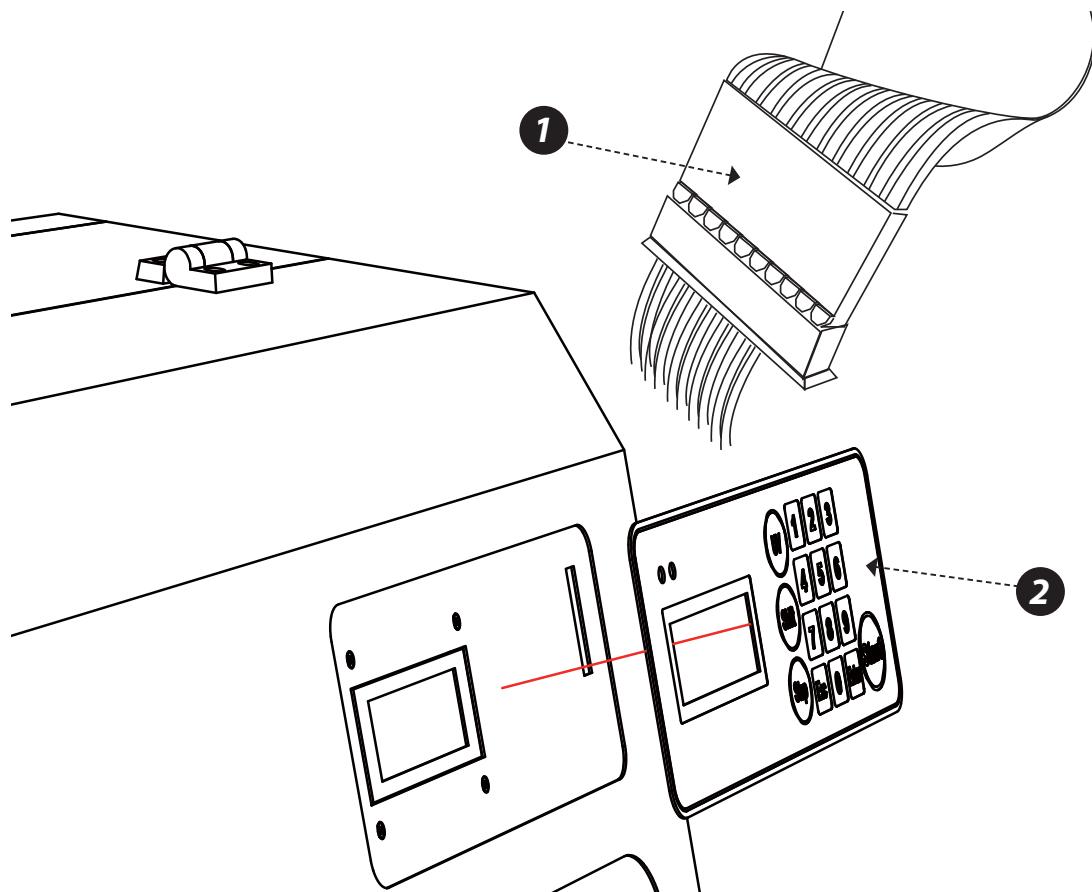
When removing the Operation Panel Cover refer to "4.1.2.3" Step 3 " and follow the instructions below.

Equipment

Double-stick tape

Procedure

- 1 Disconnect the Panel Sheet Connector.
- 2 Peel the Panel Sheet off slowly with caution.
- 3 Remove old double-stick tape thoroughly and attach the new Panel Sheet (with double-stick tape.)
- 4 Reassemble in inverse order.



4.3.2 Replacing Operation Panel

The Operation Panel Cover needs to be removed in advance, before replacing the Panel Sheet.

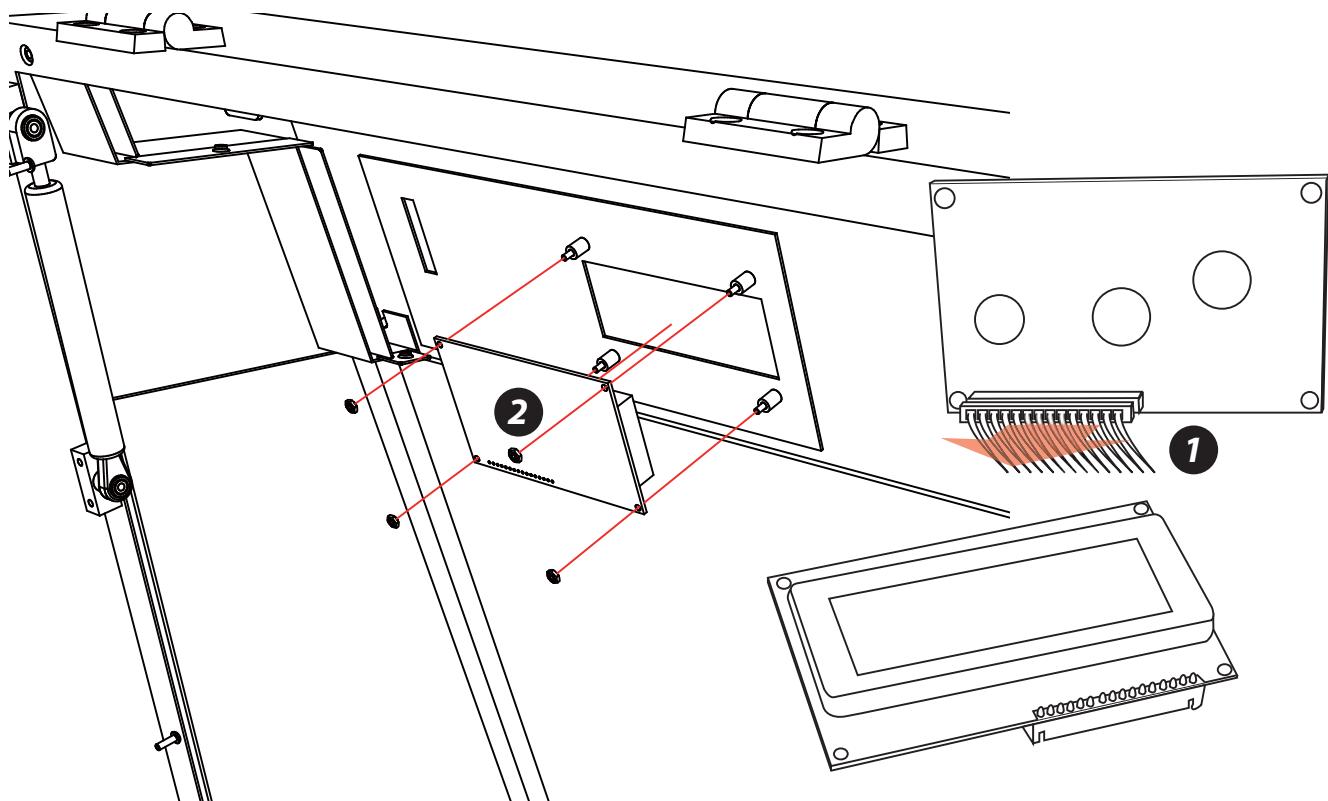
When removing the Operation Panel Cover refer to "4.1.2.3 Step 3", and follow the instructions below.

Equipment

Spanner (3mm)

Procedure

- 1 Disconnect the Operation Panel Connector.
- 2 Remove four the Operation Panel Fixing Screws.
- 3 Reassemble new Operation Panel in the inverse order.



4.4. Heat Block unit

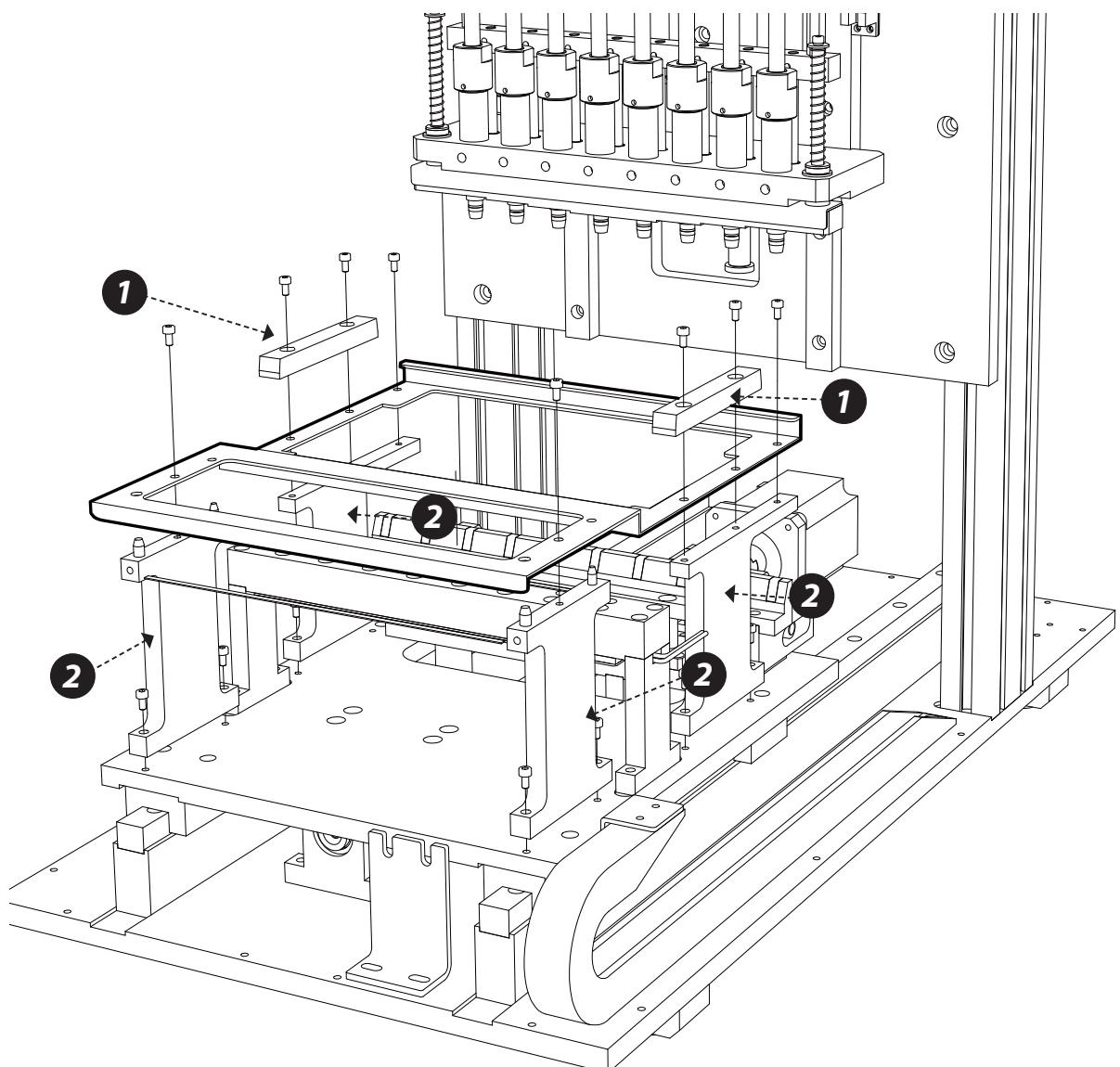
4.4.1 Removing Tip Holder Unit

Equipment

Hex Wrench (2.5mm, 3mm)

Procedure

- 1 Remove Upper part of Tip Holder unit and POM Washers.
- 2 Remove stands of Lower part of Tip Holder unit.



Next Page

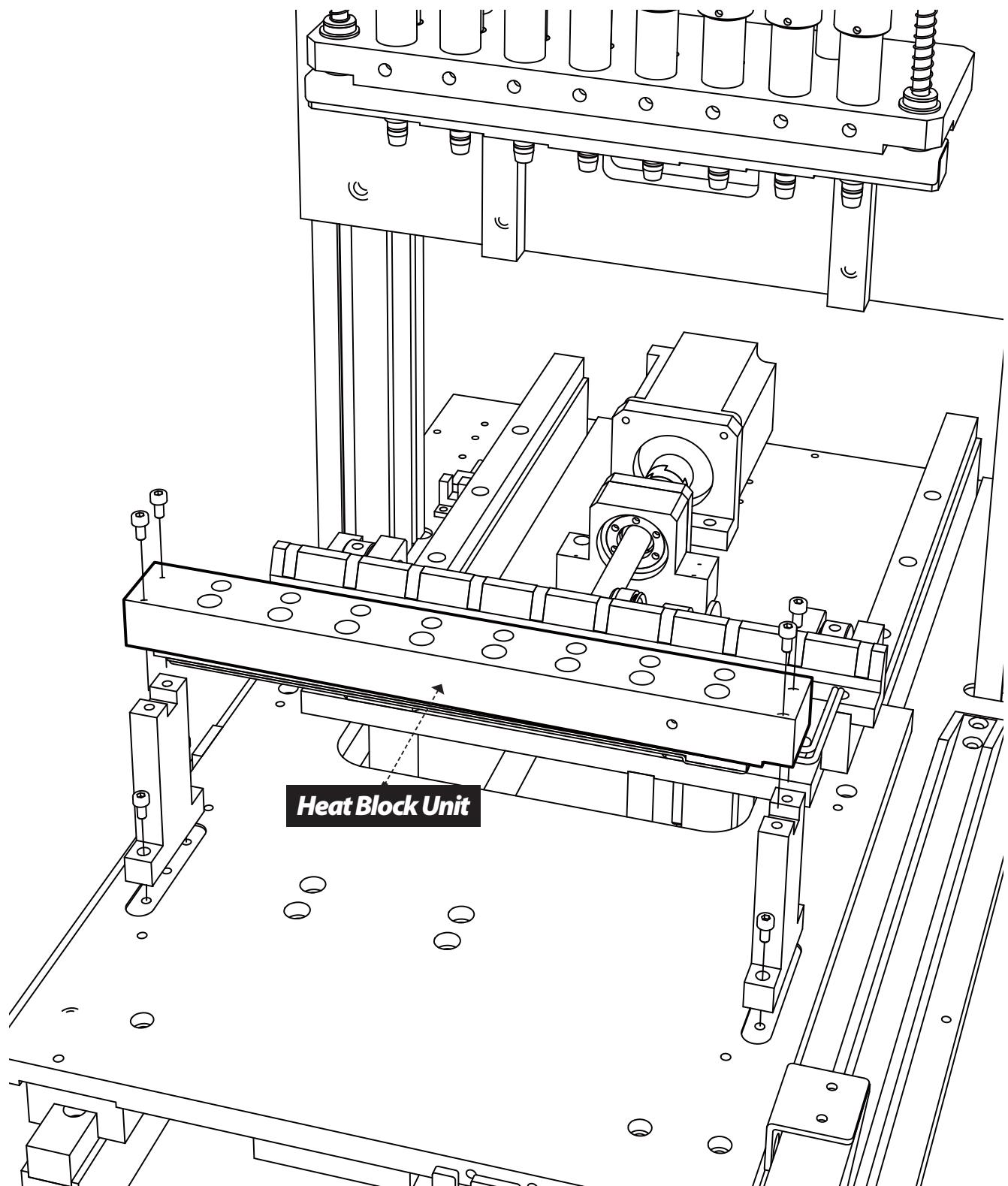
4.4.2 Replacing Heat Block Unit

Procedure

Remove the four Heat Block Unit Fixing Screws on the Y Module. Note: Use Hex Wrench (3mm)

Remove heat block unit.

Reassemble new Operation Panel in the inverse order.



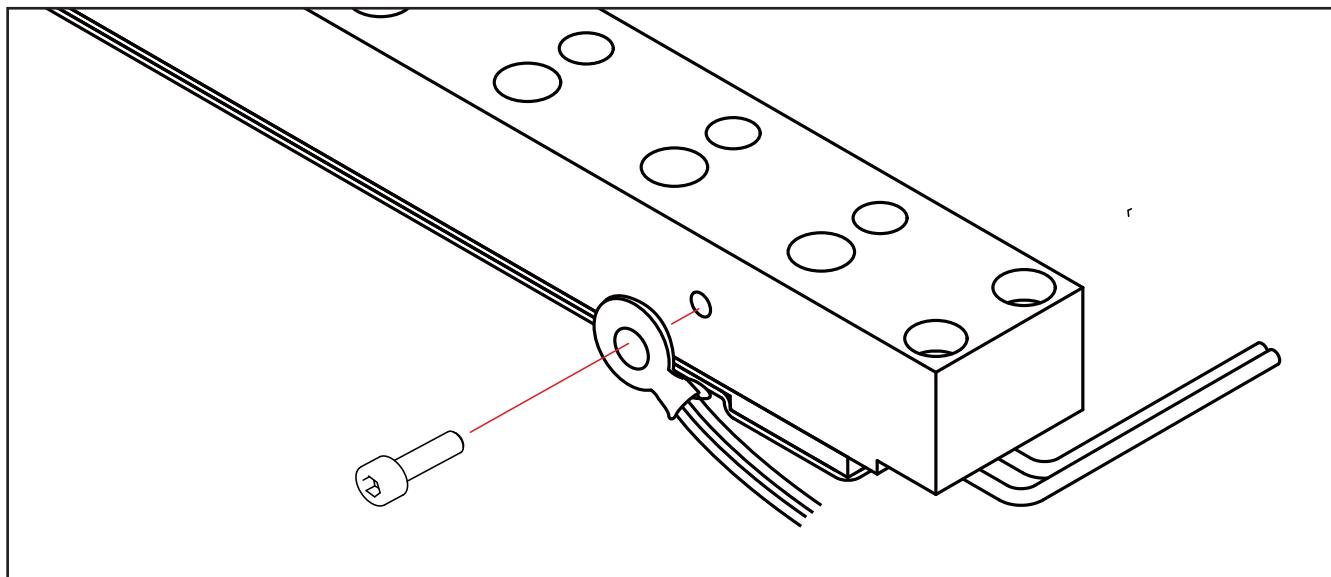
4.4.3 Replacing Temperature Sensor

Equipment

Hex Wrench (2mm)

Procedure

- 1 Remove a Temperature Sensor Terminal Block Fixing Screw beside the Heat Block Unit.
- 2 Reassemble in inverse order after completion of replacement.



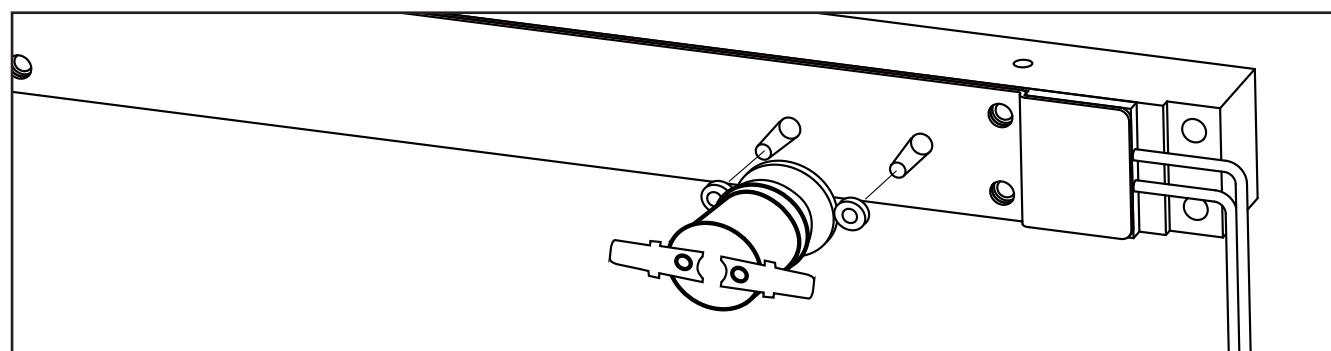
4.4.4 Replacing Thermal Protector

Equipment

Spanner (3mm)

Procedure

- 1 Remove the two Thermal Protector Fixing Screws under the Heat Block Unit.
- 2 Reassemble in inverse order after completion of replacement.

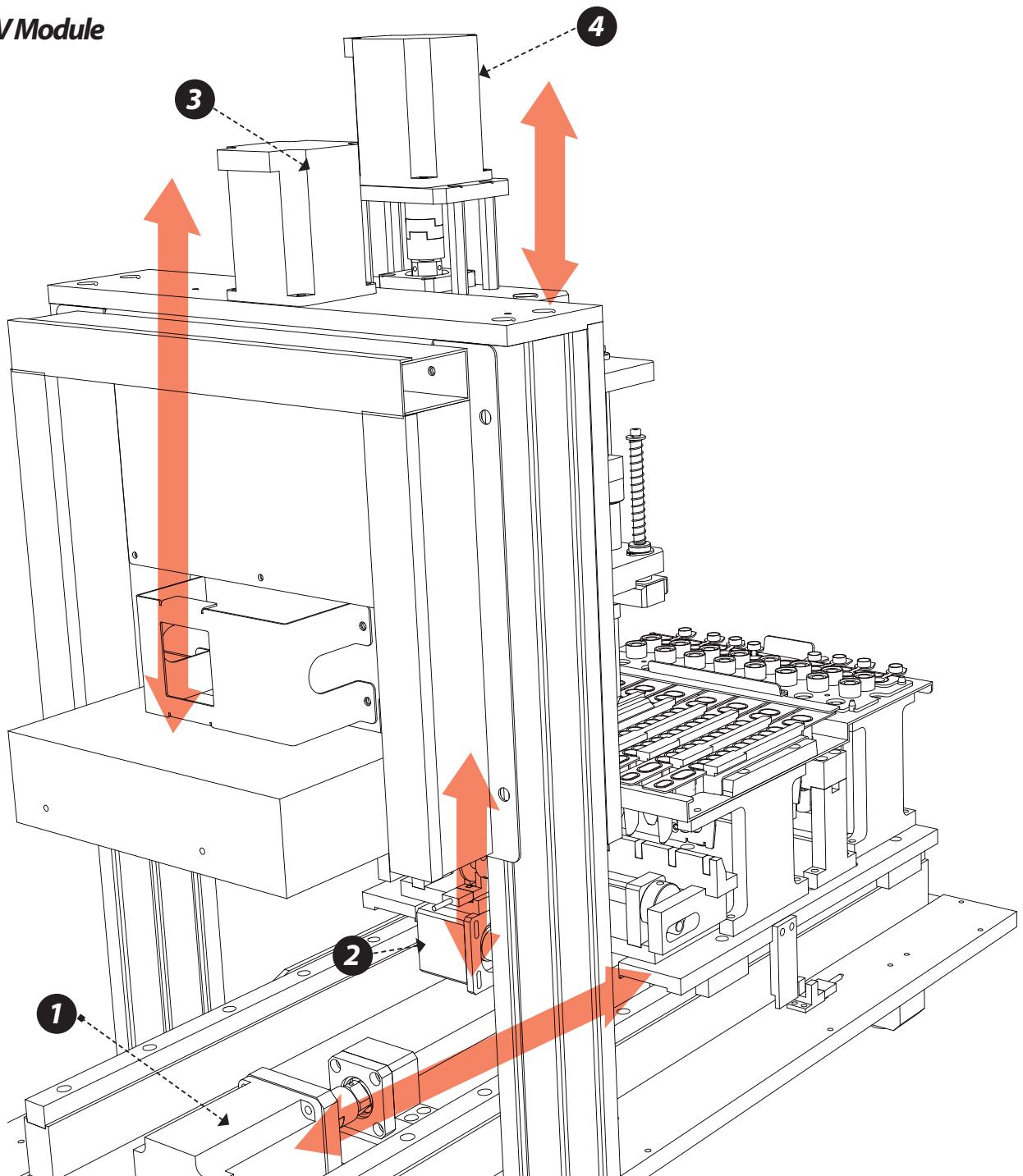


4.5 Maintenance of Internal Modules

4.5.1 Internal Modules Position

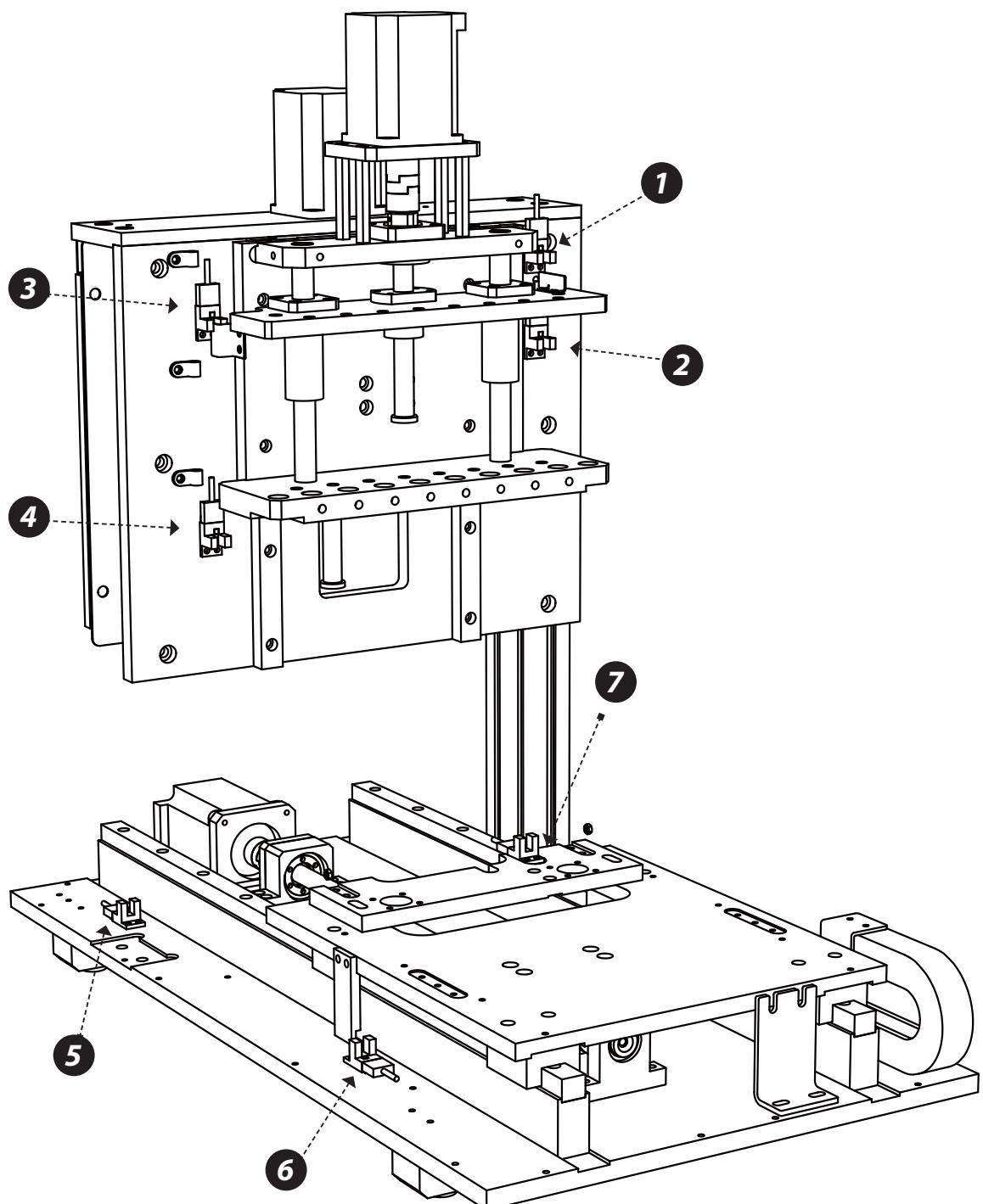
The system consists of the following four major modules.

- 1** *XModule*
- 2** *EModule*
- 3** *YModule*
- 4** *VModule*



4.5.2 Sensor Position

- 1 V+ sensor
- 2 V- sensor
- 3 Y+ sensor
- 4 Y- sensor
- 5 X+ sensor
- 6 X- sensor
- 7 M+ sensor



4.5.3 X Module

4.5.3.1 Cleaning and Lubricating X Axis LM Guides and Ball

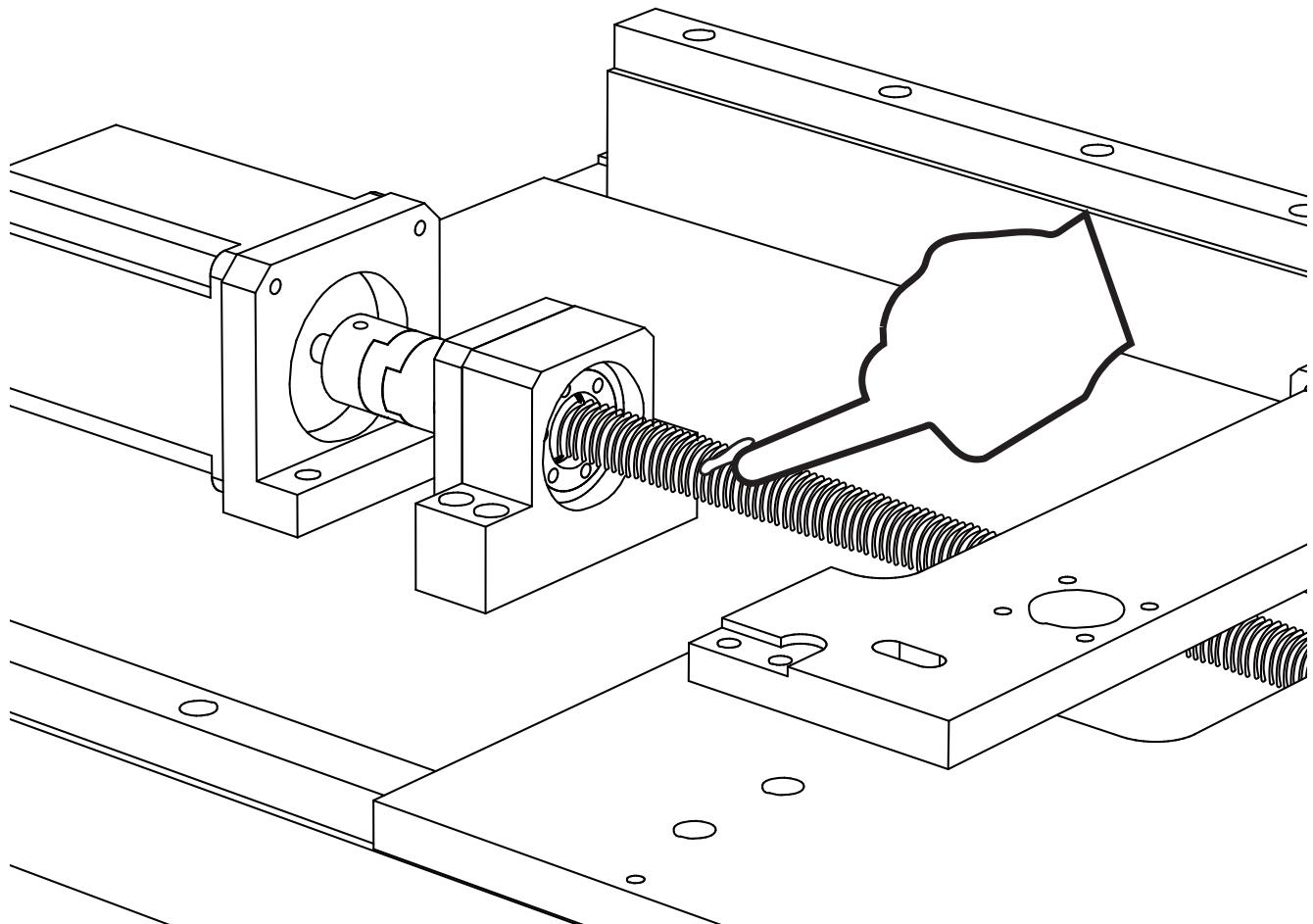
Equipment

LM Guide grease (recommended)

Ball Screw grease (recommended)

Procedure

- 1 Clean up both the X Axis LM Guides and the X Axis Ball Screw.
- 2 Evenly apply a small amount of recommended grease on the X Axis LM Guides and the X Axis Ball Screw.
- 3 Wipe off the excess grease.



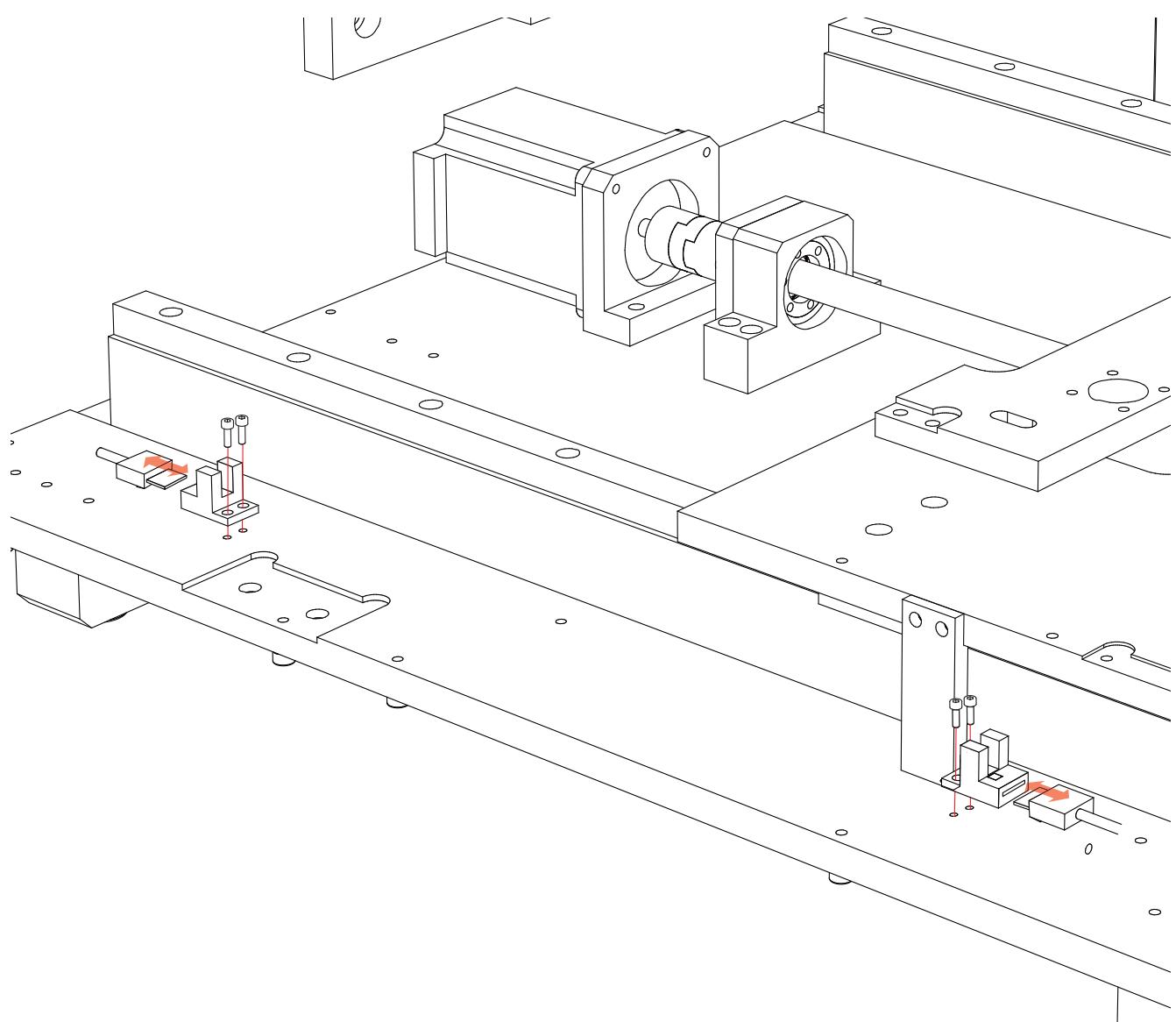
4.5.3.2 Replacing X Axis ORG Sensor (XORG, +XEL)

Equipment

Hex Wrench (2.5mm)

Procedure

- 1 Disconnect each Sensor Connector and remove the two Fixing Screws for each and replace each sensor.
- 2 Perform a readjustment of the teaching parameters after replacing the XORG Sensor.



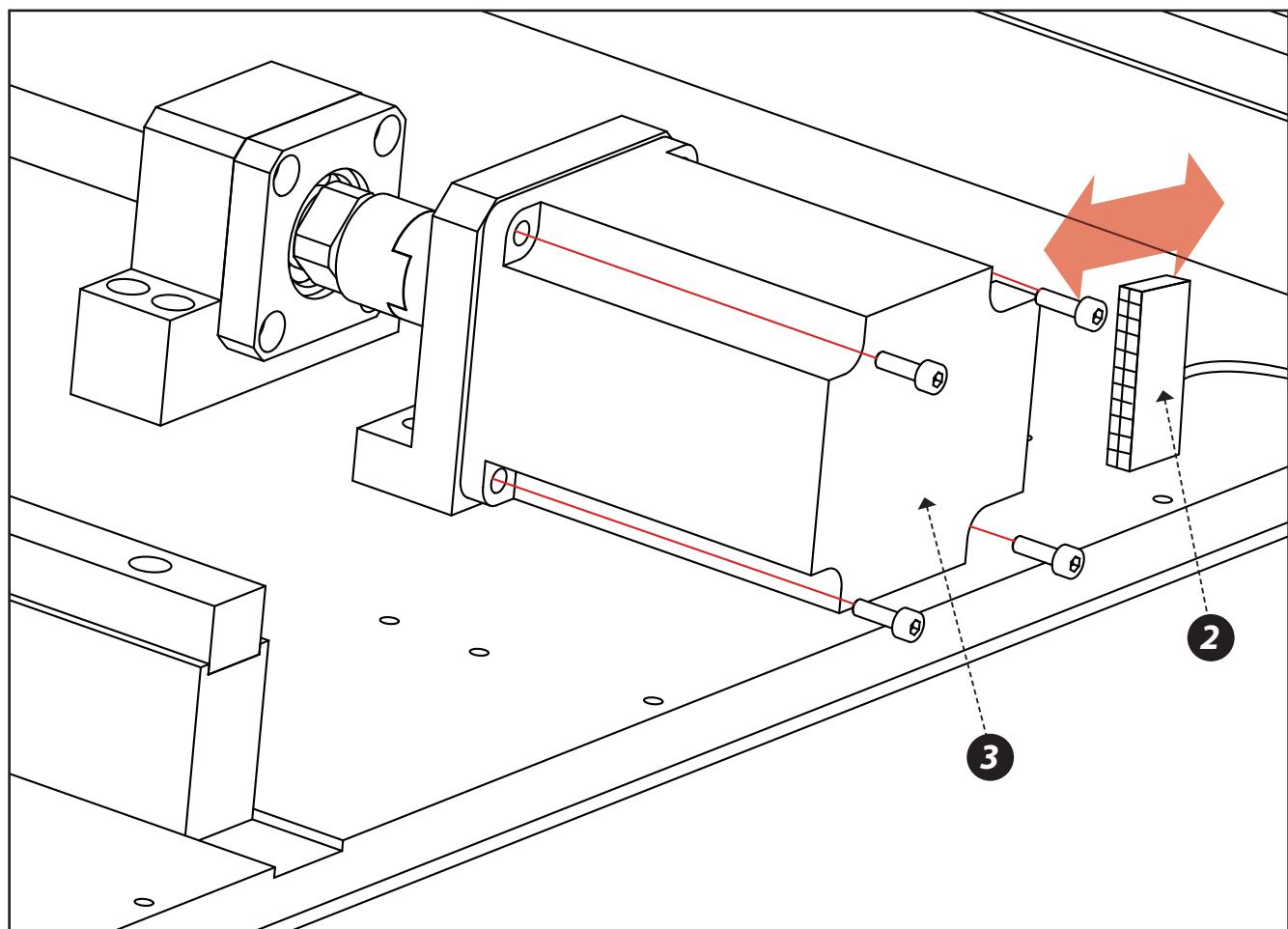
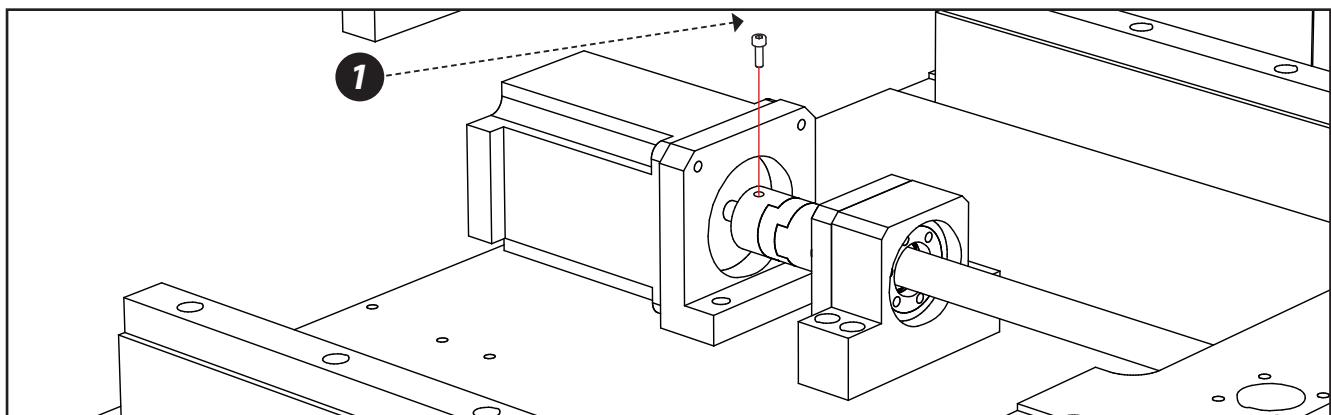
4.5.3.3 Replacing X Axis Motor

Equipment

Hex Wrench (2.5mm, 3mm)

Procedure

- 1 Loosen the Set Screw for X Axis Coupling. Note: Use Hex Wrench (2.5mm)
- 2 Disconnect the X Axis Motor Connector.
- 3 Remove the X Axis Motor by removing the four X Axis Motor Fixing Screws. Note: Use Hex Wrench (3mm)
- 4 Reassemble in inverse order after completion of replacement.



4.5.4 Y Module

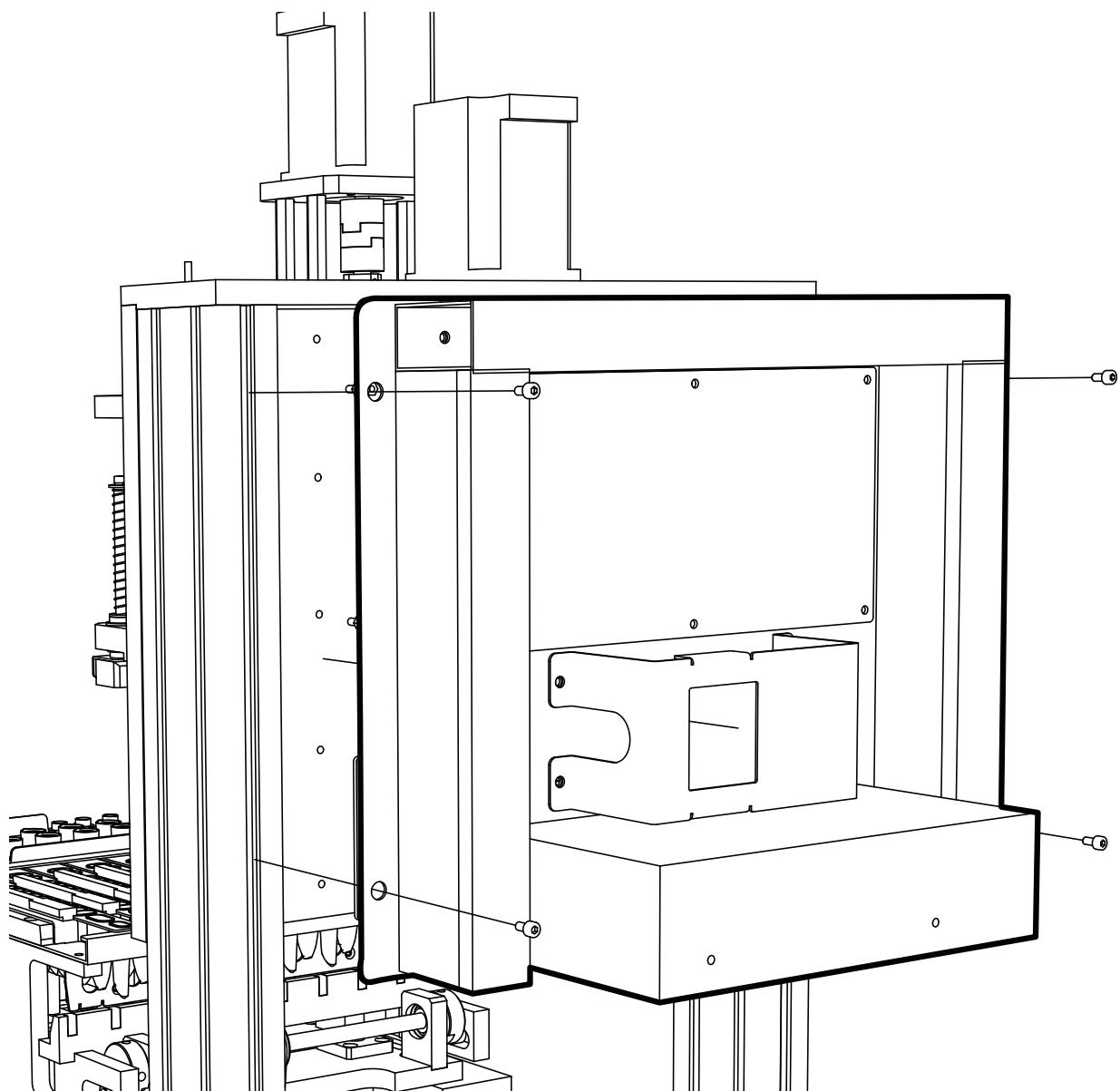
4.5.4.1 Removing Electronic Control Board

Equipment

Hex Wrench (4mm), Ball Screw grease (recommended), Ball Screw grease (recommended)

Procedure

- 1 Disconnect the any Connector from the PCB.
- 2 Remove the four Electronic Control Board Fixing Screws.



4.5.4.2 Cleaning and Lubricating Y Axis Ball Screw

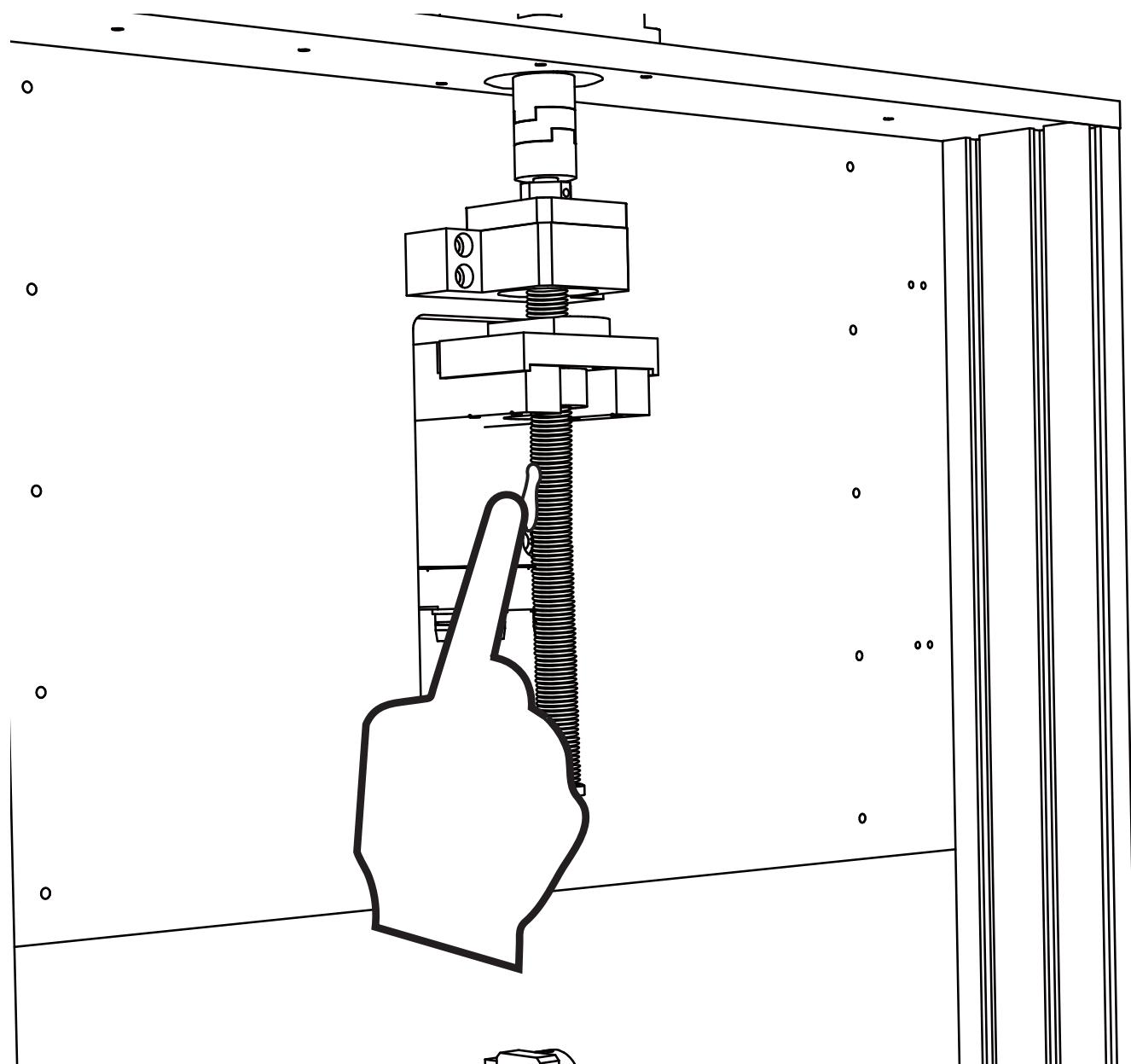
Equipment

LM Guide grease (recommended)

Ball Screw grease (recommended)

Procedure

- 1 Clean up both the Y Axis LM Guides and the Y Axis Ball Screw.
- 2 Evenly apply a small amount of recommended grease on the Y Axis LM Guides and the Y Axis Ball Screw.
- 3 Wipe off the excess grease.



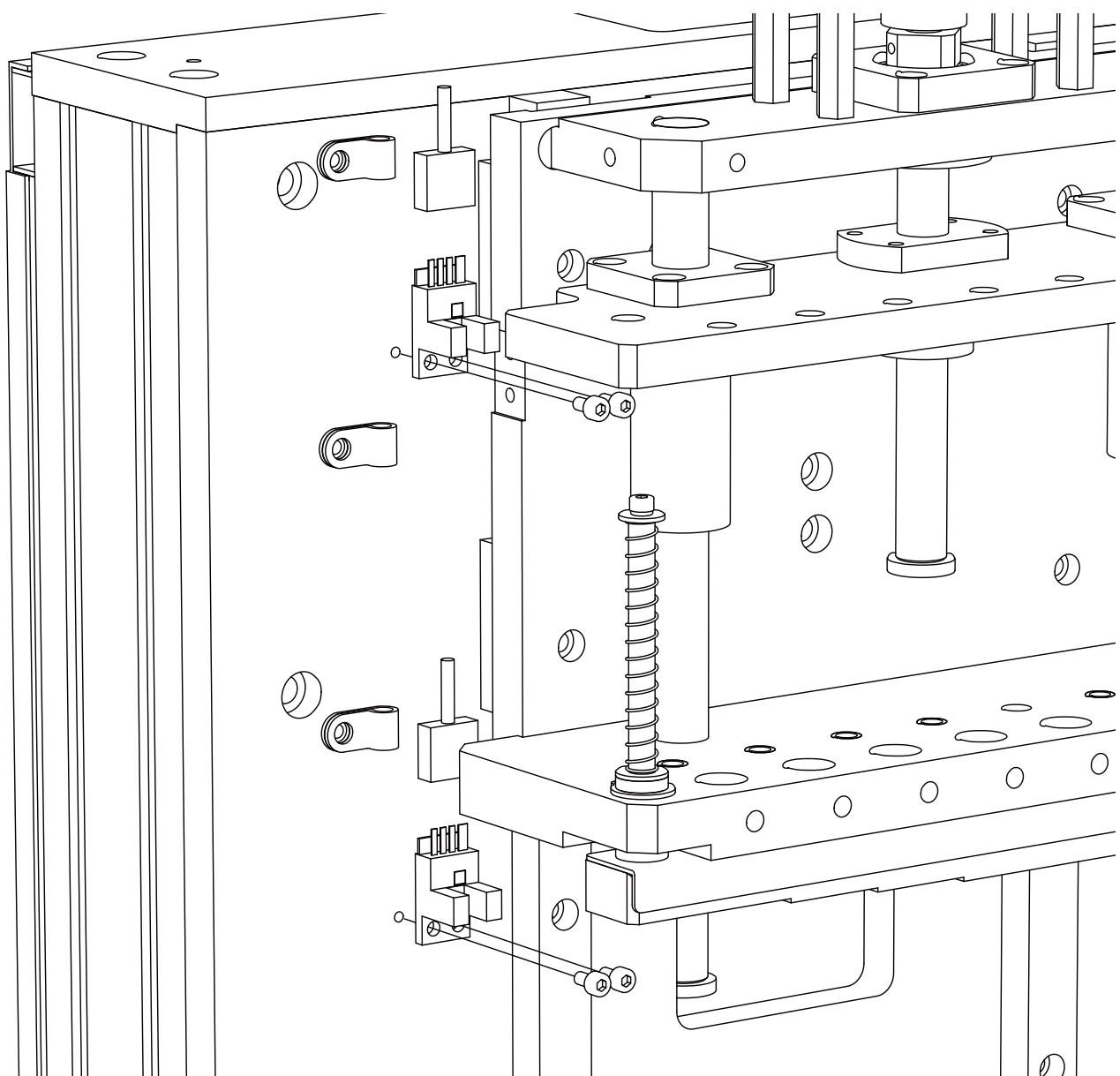
4.5.4.3 Replacing Y Axis ORG Sensor (YORG, + YEL)

Equipment

Hex Wrench (2.5mm)

Procedure

- 1 Disconnect each Sensor Connector and remove the two Fixing Screws for each and replace each sensor.
- 2 Perform a readjustment of the teaching parameters after replacing the YORG Sensor.



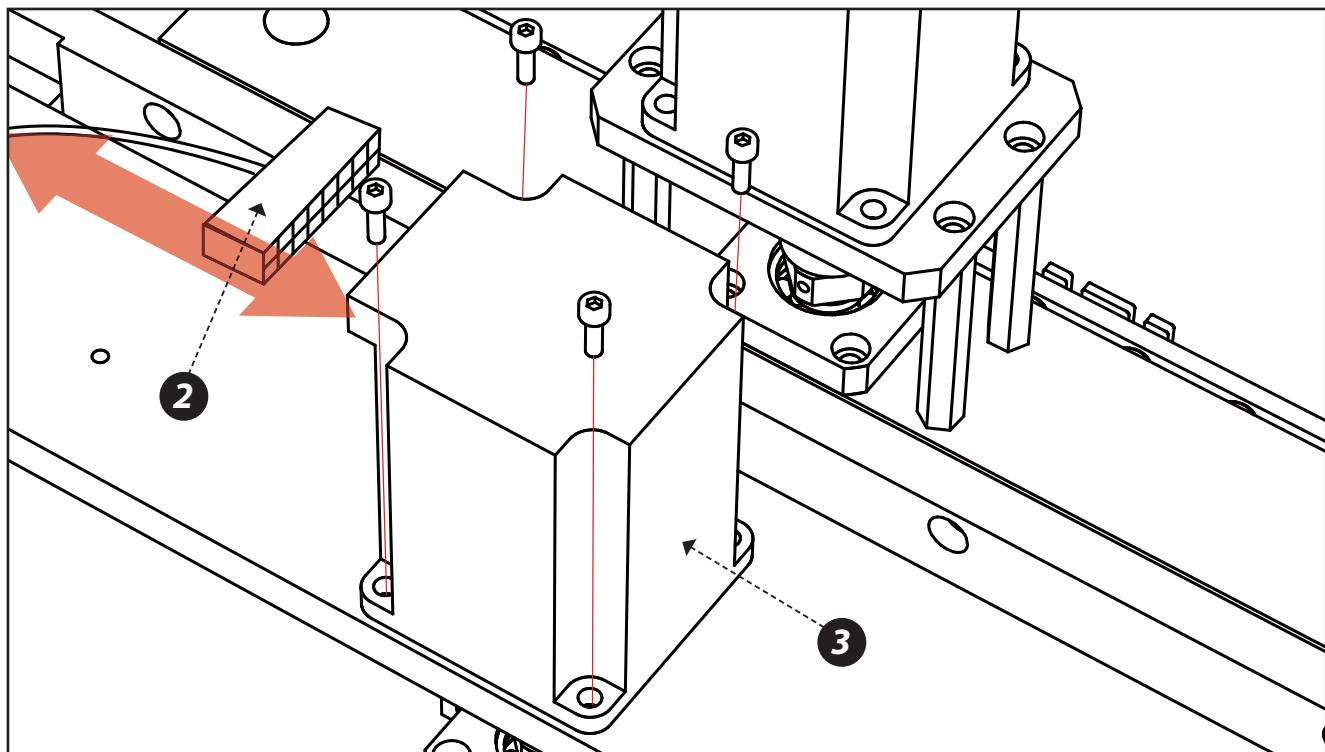
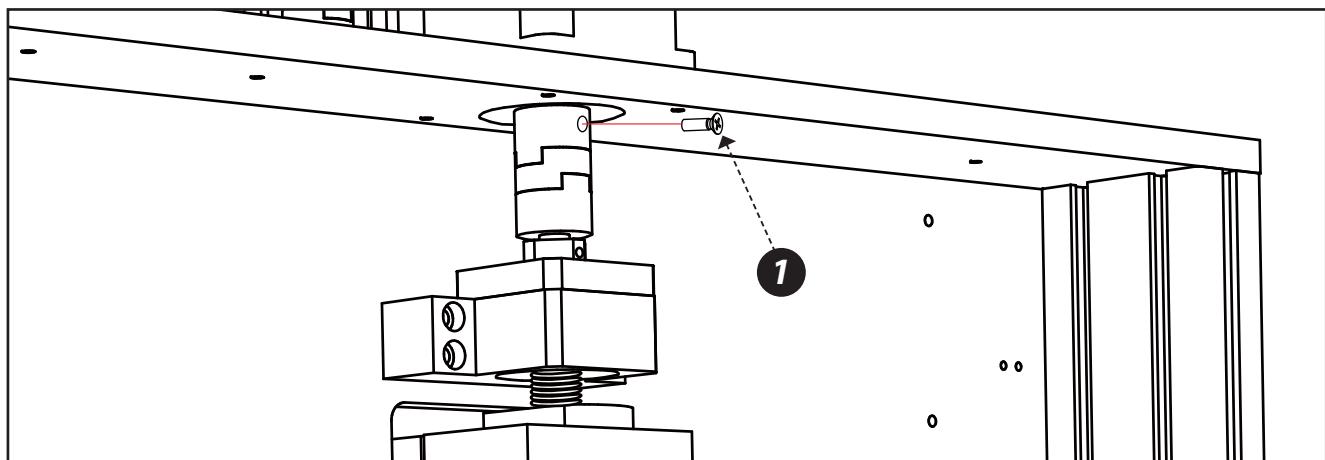
4.5.4.5 Replacing Y Axis Motor

Equipment

Hex Wrench (2.5mm, 3mm)

Procedure

- 1 Loosen the Set Screw for Y Axis Coupling. Note: Use Hex Wrench (2.5mm)
- 2 Disconnect the Y Axis Motor Connector.
- 3 Remove the Y Axis Motor by removing the four Y Axis Motor Fixing Screws. Note: Use Hex Wrench (3mm)
- 4 Reassemble in inverse order after completion of replacement.



4.5.5 V Module

4.5.5.1 Cleaning and Lubricating V Axis Linear Shaft and Ball Screw

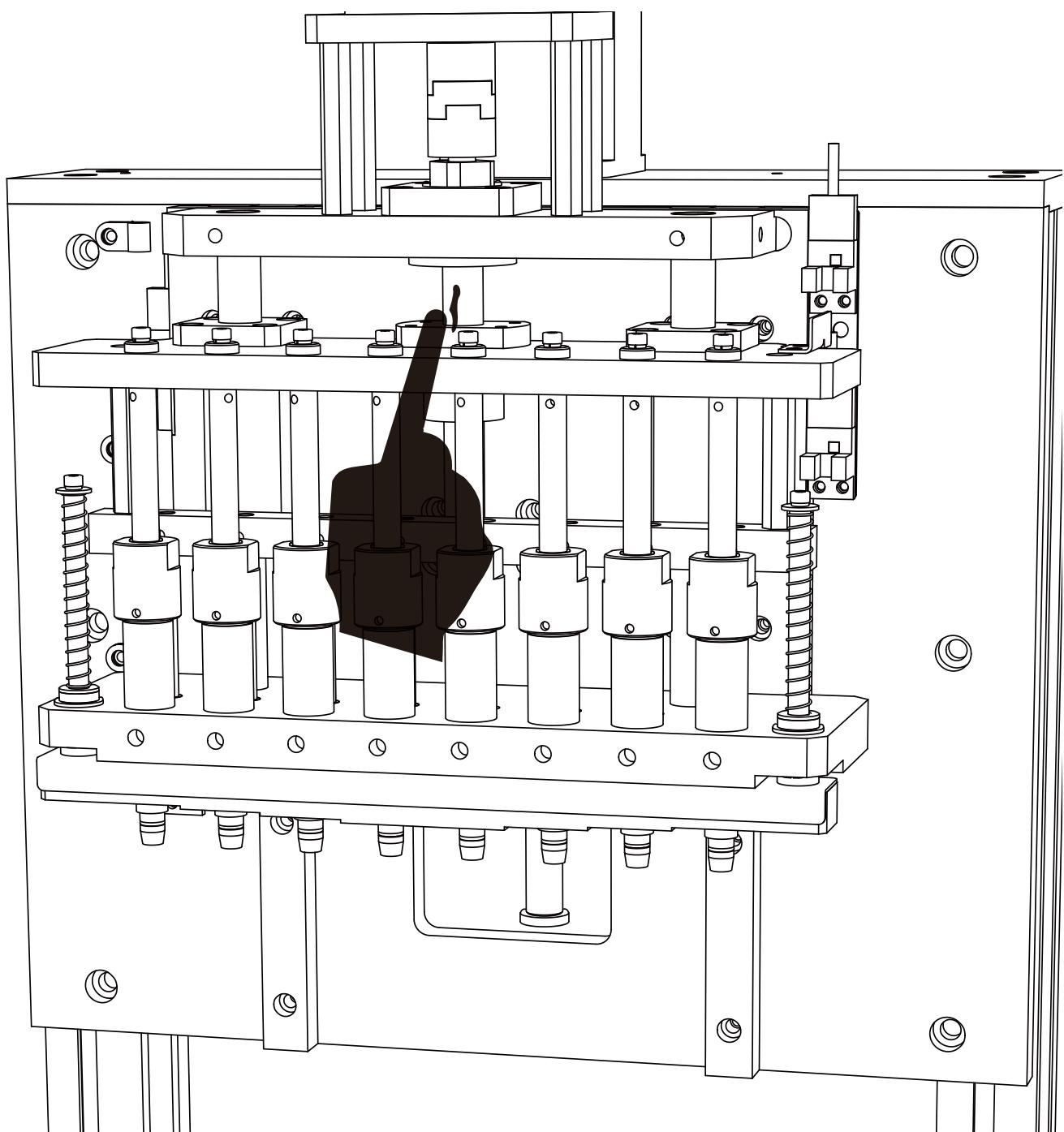
Equipment

LM Guide grease (recommended)

Ball Screw grease (recommended)

Procedure

- 1 Clean up both the V Axis LM Guides and the V Axis Ball Screw.
- 2 Evenly apply a small amount of recommended grease on the V Axis LM Guides and the V Axis Ball Screw.
- 3 Wipe off the excess grease.



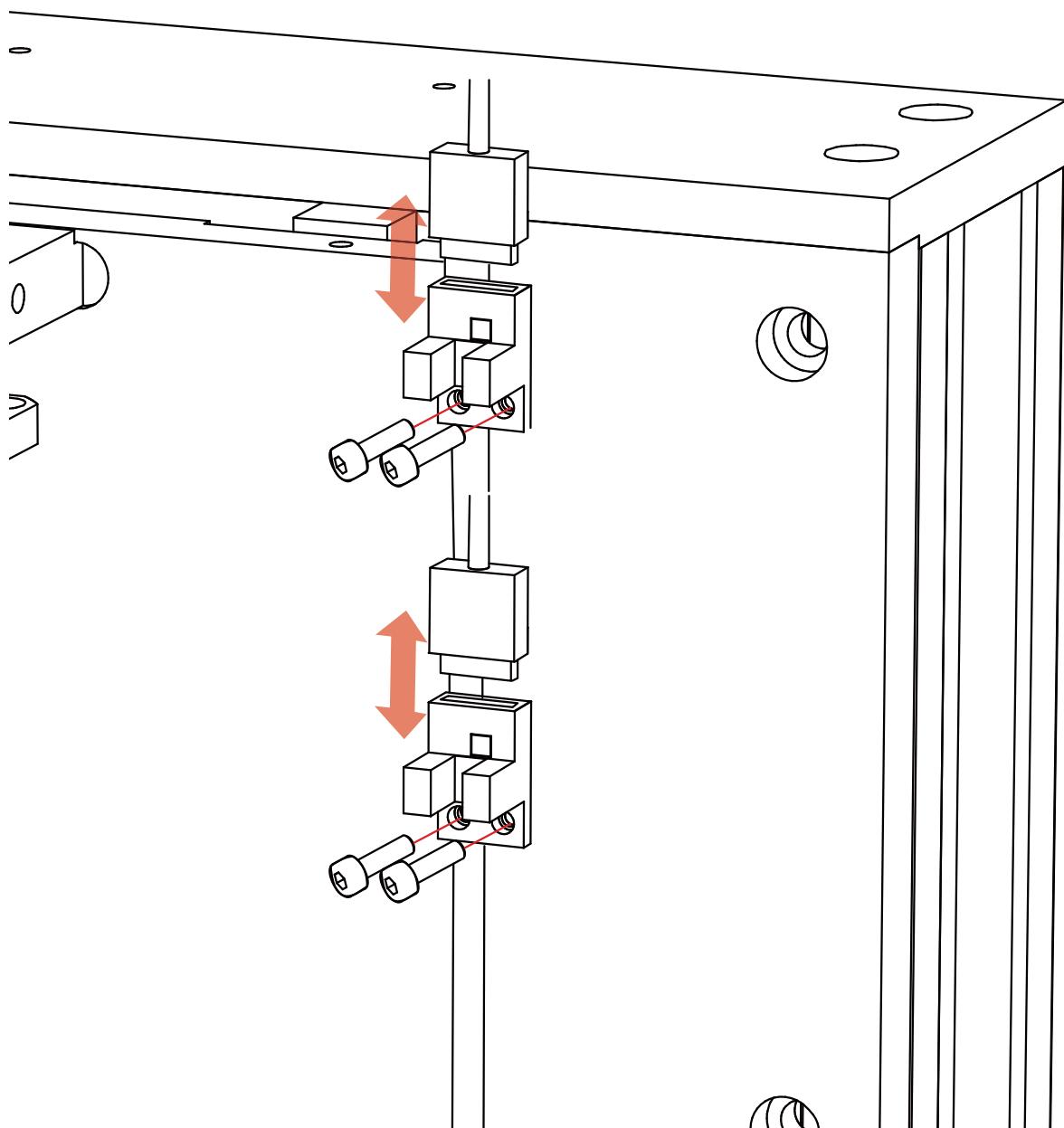
4.5.5.2 Replacing V Axis ORG Sensor (VORG, VEL)

Equipment

Hex Wrench (2.5mm)

Procedure

- 1 Disconnect each Sensor Connector and remove the two Fixing Screws for each and replace each sensor.
- 2 Perform a readjustment of the teaching parameters after replacing the VORG Sensor.



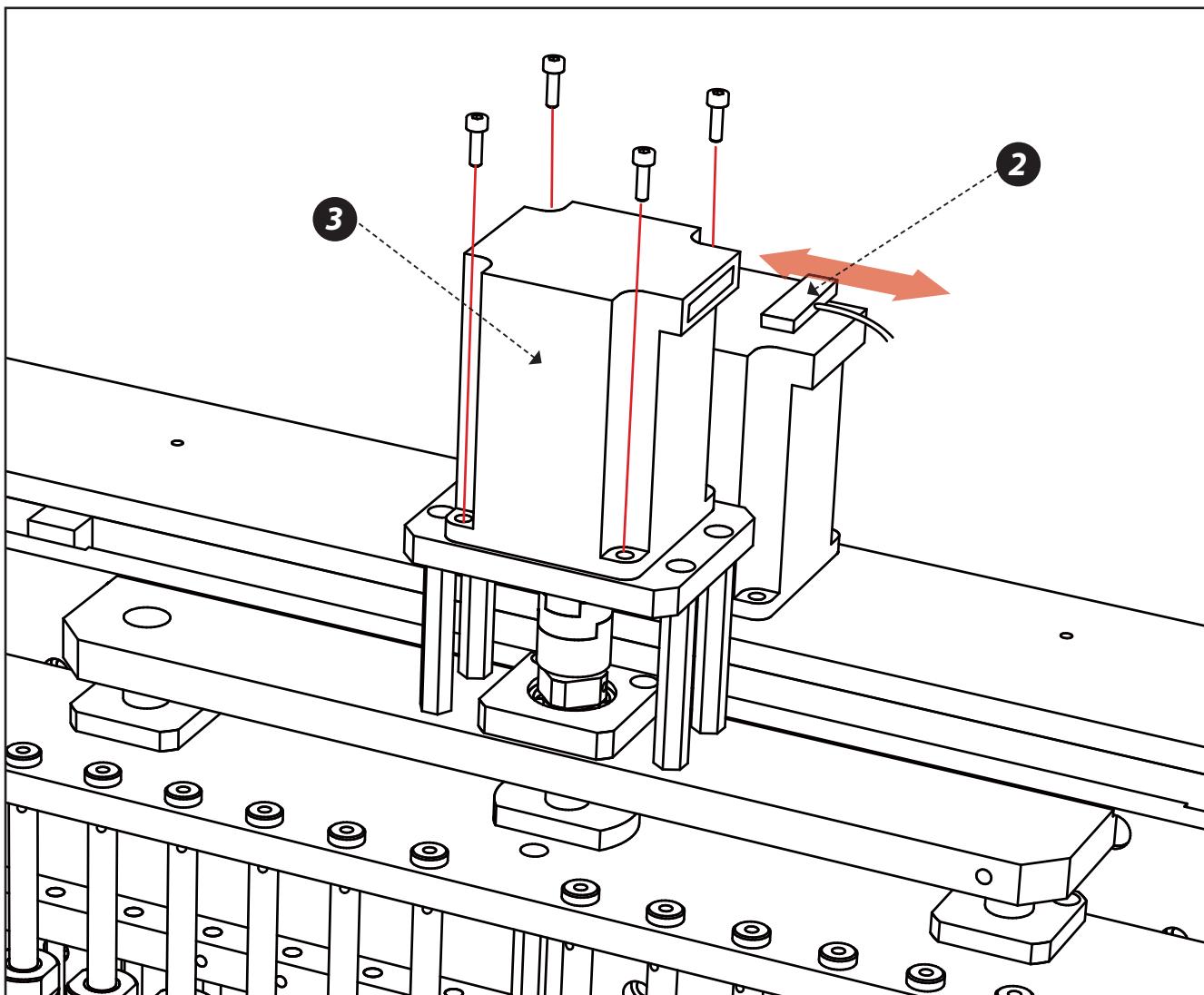
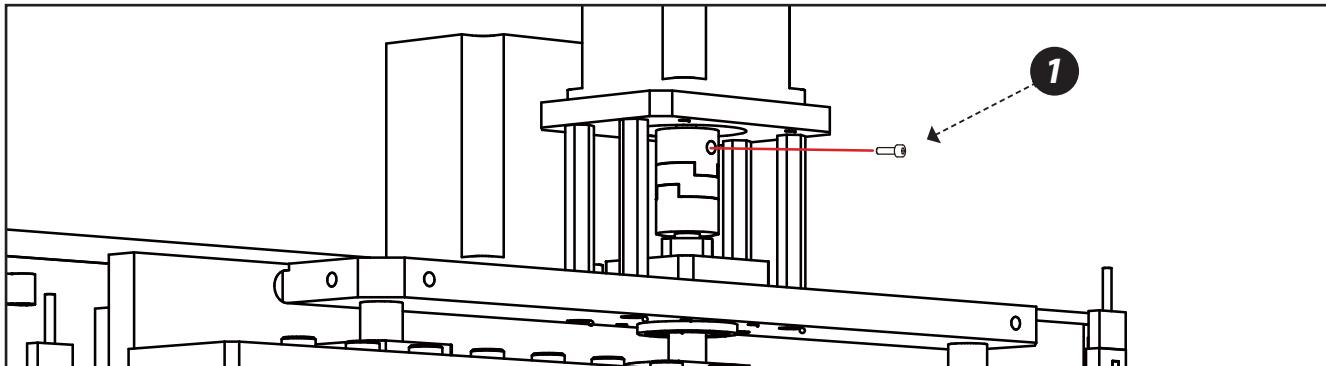
4.5.5.3 Replacing V Axis Motor

Equipment

Hex Wrench (2.5mm, 3mm)

Procedure

- 1 Loosen the Set Screw for V Axis Coupling. Note: Use Hex Wrench (2.5mm)
- 2 Disconnect the V Axis Motor Connector.
- 3 Remove the V Axis Motor by removing the four V Axis Motor Fixing Screws. Note: Use Hex Wrench (3mm)
- 4 Reassemble in inverse order after completion of replacement.



4.5.6 E Module

4.5.6.1 Replacing Magnet Unit

The Tip Holder Unit needs to be removed, before replacing the Magnet Unit.

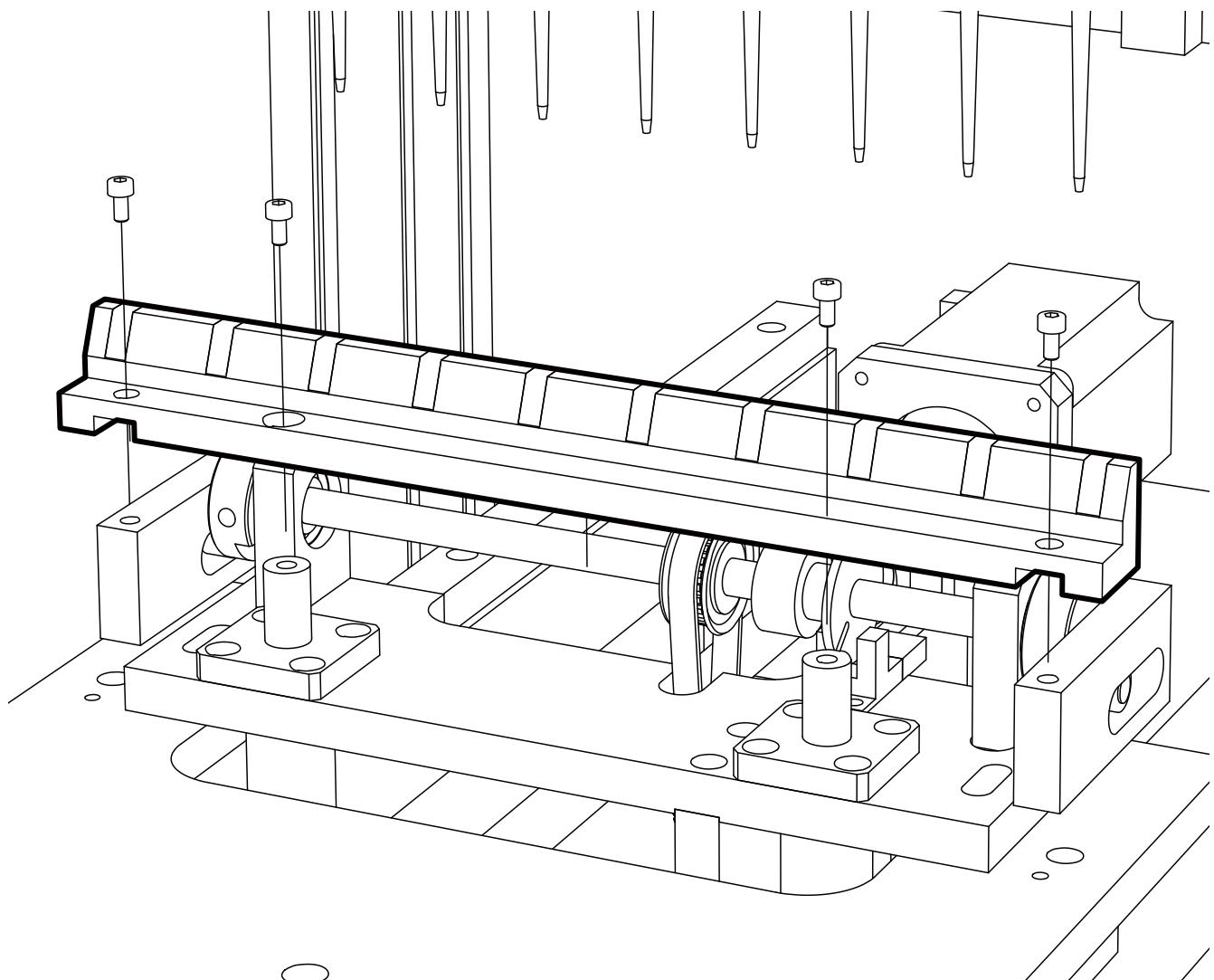
When removing the Tip Holder Unit refer to "4.4.1 Removing Tip Holder Unit," and follow the instructions below.

Equipment

Hex Wrench (4mm)

Procedure

- 1 Remove the Magnet Unit by removing the four Magnet Unit Fixing Screws.
- 2 Reassemble in inverse order after completion of replacement.



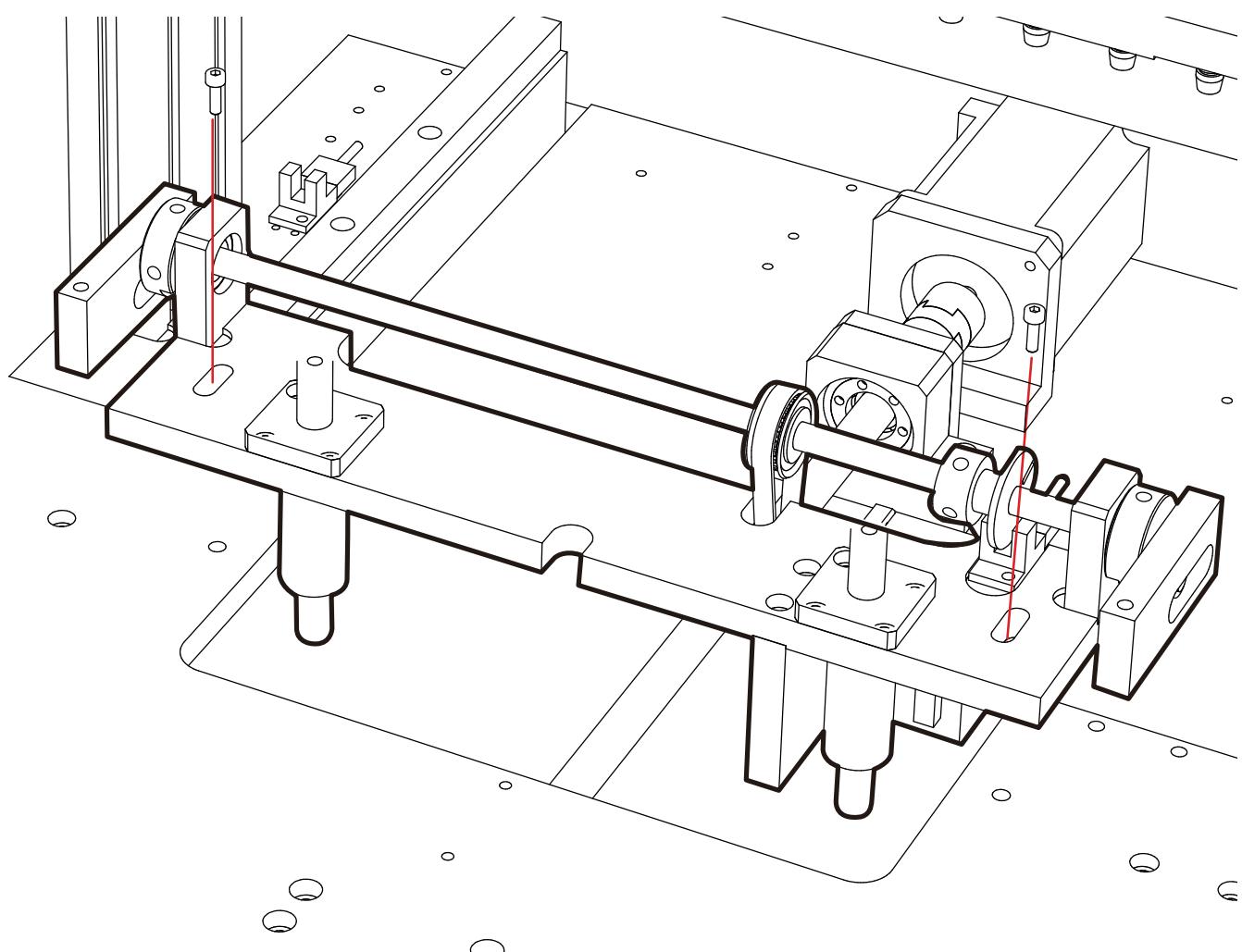
4.5.6.2 Removing E Axis Shaft Unit

Equipment

Hex Wrench (5mm)

Procedure

- 1 Remove the E Module by removing the two E Module Fixing Screws.



4.5.6.3 Replacing E Axis Timing Belt

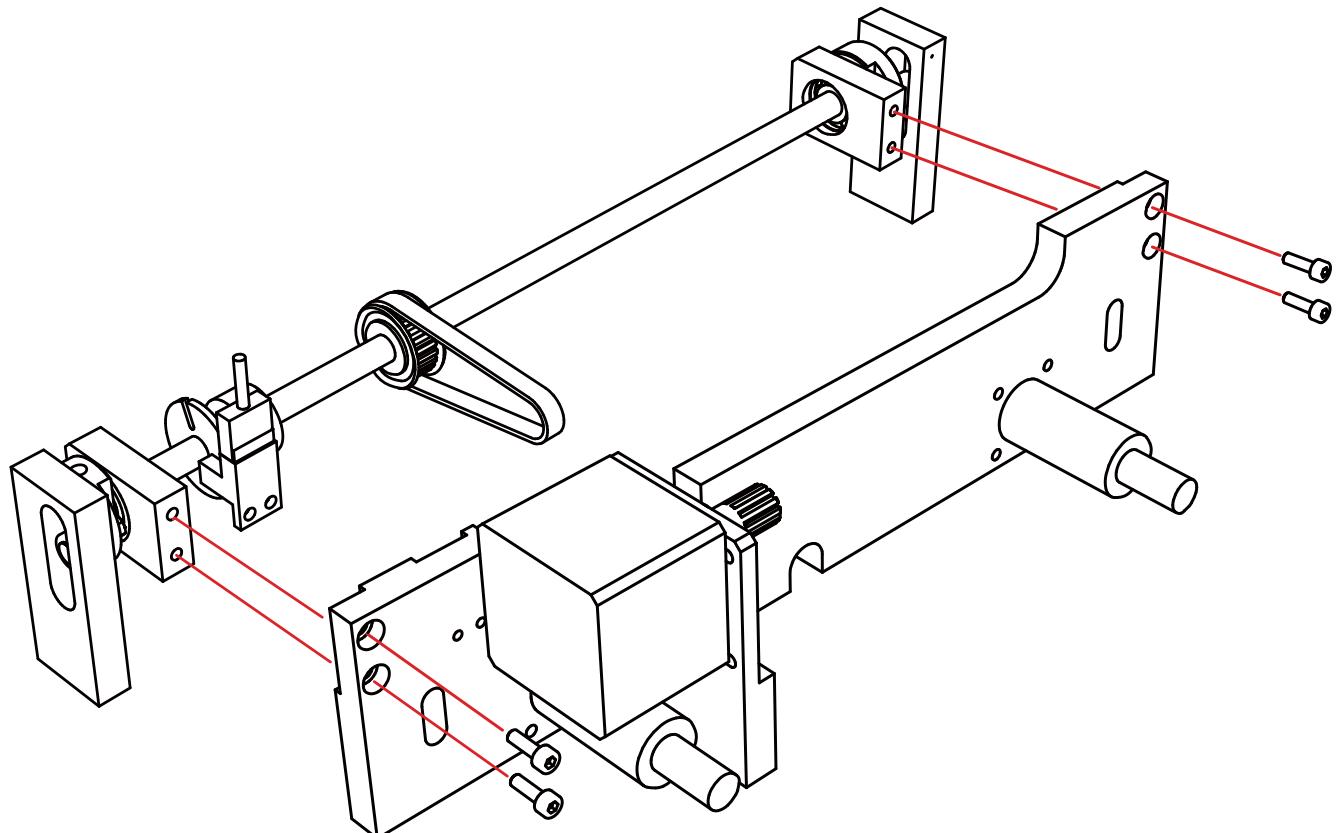
Equipment

Hex Wrench (3mm)

Procedure

- 1 removing the four E Module Fixing Screws.
- 2 Remove and replace the E Axis Timing Belt from the E Axis Shaft.
- 3 Reassemble in inverse order after completion of replacement.

Perform a readjustment of the teaching parameters after replacing the E Axis Timing Belt.



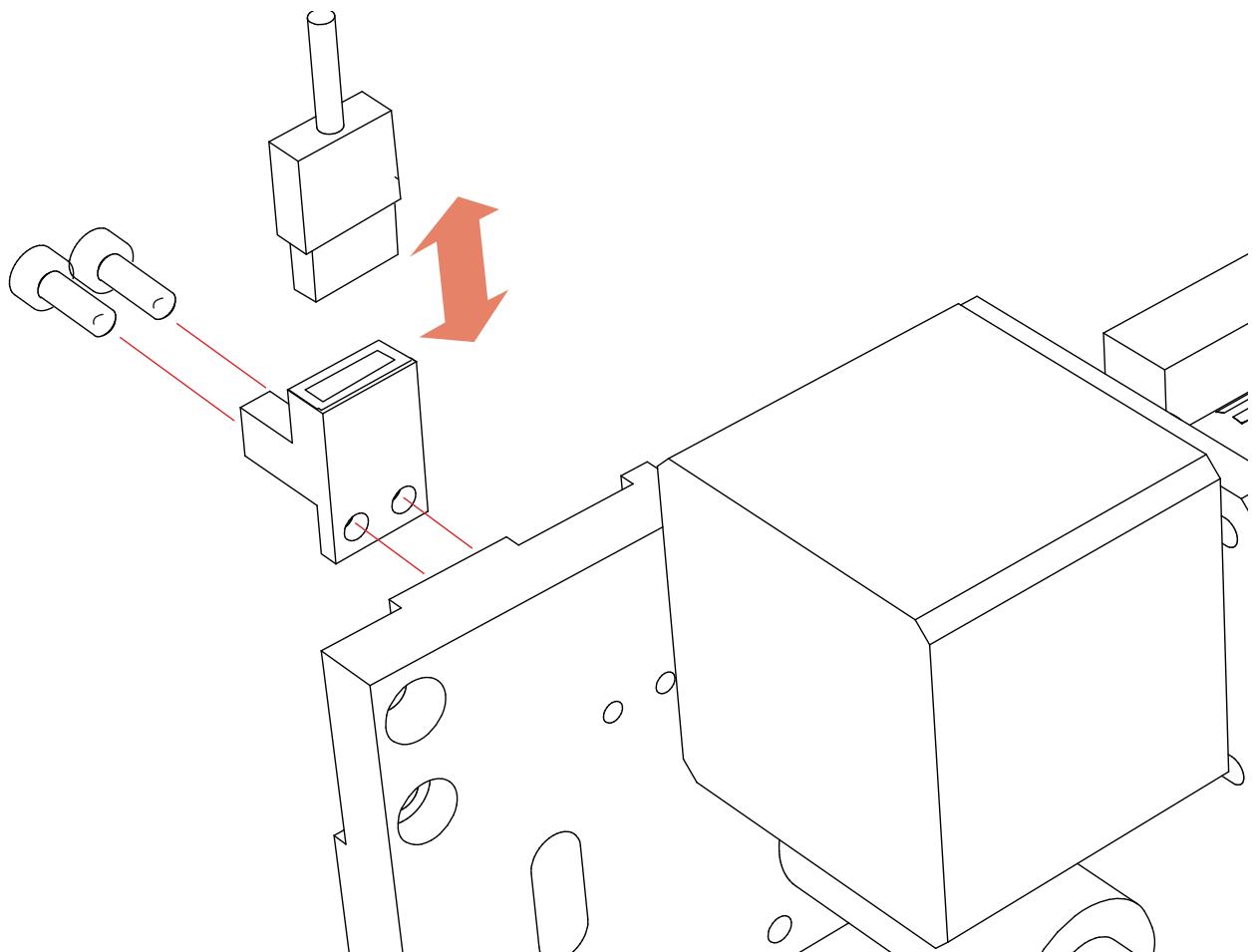
4.5.6.4 Replacing E Axis ORG Sensor (EORG)

Equipment

Hex Wrench (2.5mm)

Procedure

- 1 Disconnect each Sensor Connector and remove the two Fixing Screws for each and replace each sensor.
- 2 Perform a readjustment of the teaching parameters after replacing the EORG Sensor.



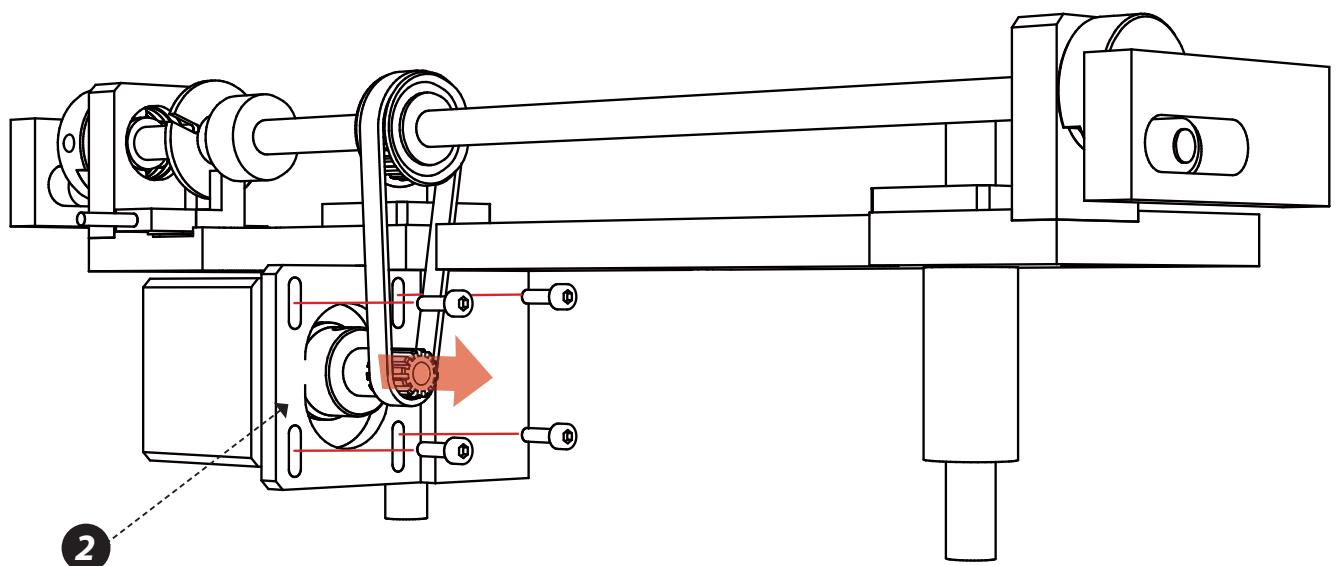
4.5.6.5 Replacing E Axis Motor

Equipment

Hex Wrench (2.5mm, 3mm)

Procedure

- 1 Disconnect the Y Axis Motor Connector.
- 2 Remove the Y Axis Motor by removing the four Y Axis Motor Fixing Screws. Note: Use Hex Wrench (3mm)
- 3 Reassemble in inverse order after completion of replacement.



4.6 Single Syringe

4.6.1 Replacing Single Syringe

The Front Lid needs to be removed in advance, before replacing the Single Syringe.

When removing the Front Lid refer to "4.1.2.2 Removing Front Lid," and follow the instructions below.

Equipment

Hex Wrench (2.5mm, 3mm)

Procedure

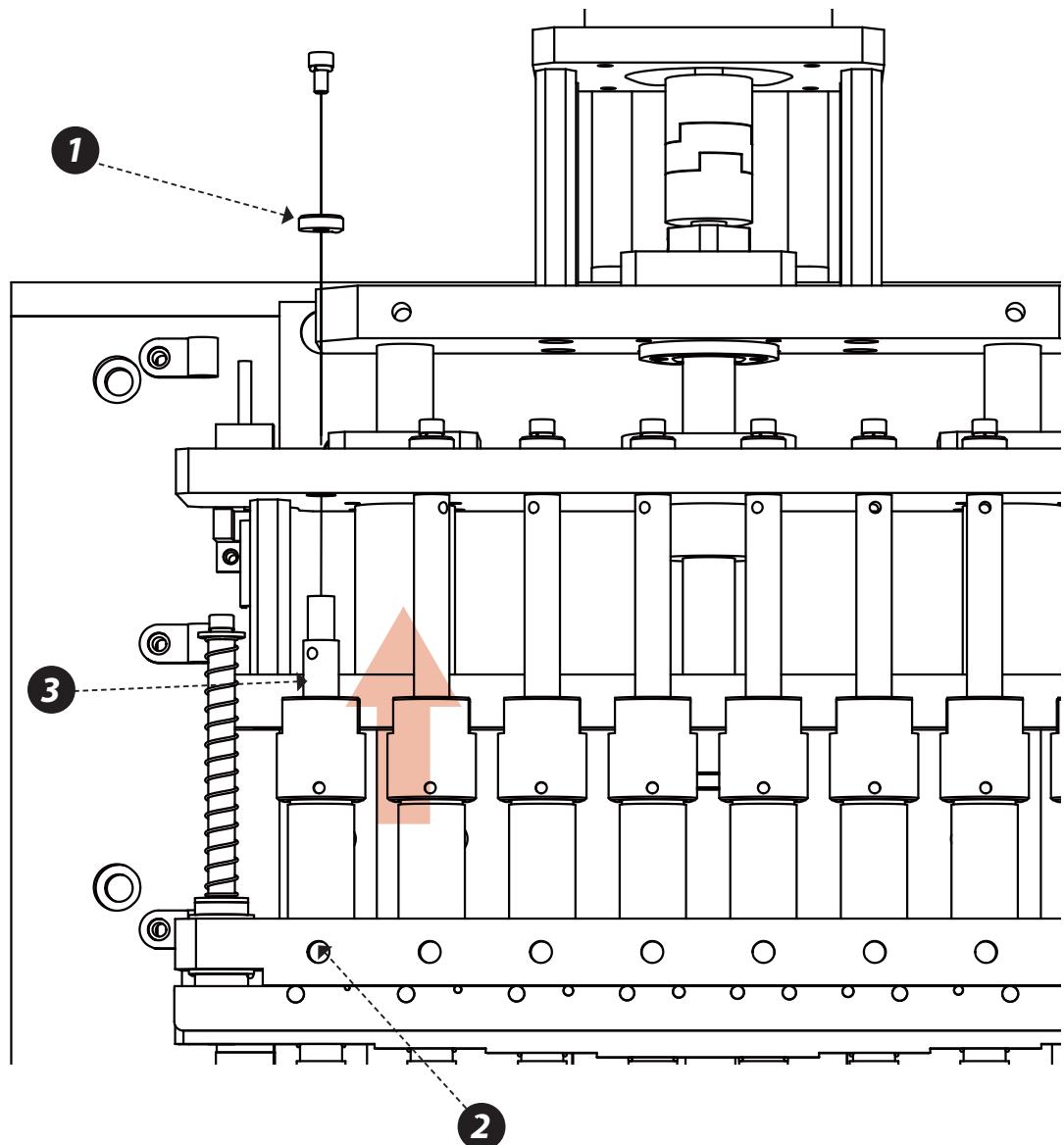
1 Remove the Single Syringe by removing the syringe top Fixing Screw.

2 Remove the Front side Fixing Screw.

Use Hex Wrench (2.5mm) Top Fixing Screw

Use Hex Wrench (3mm) Front Side Fixing Screw

Reassemble in inverse order after completion of the replacement.



4.6.2 Replacing Syringe O-Rings

The Single Syringe needs to be removed in advance, before replacing the Syringe O Rings.

When removing the Single Syringe refer to "4.6.1 Replacing Single Syringe" and follow the instructions below.

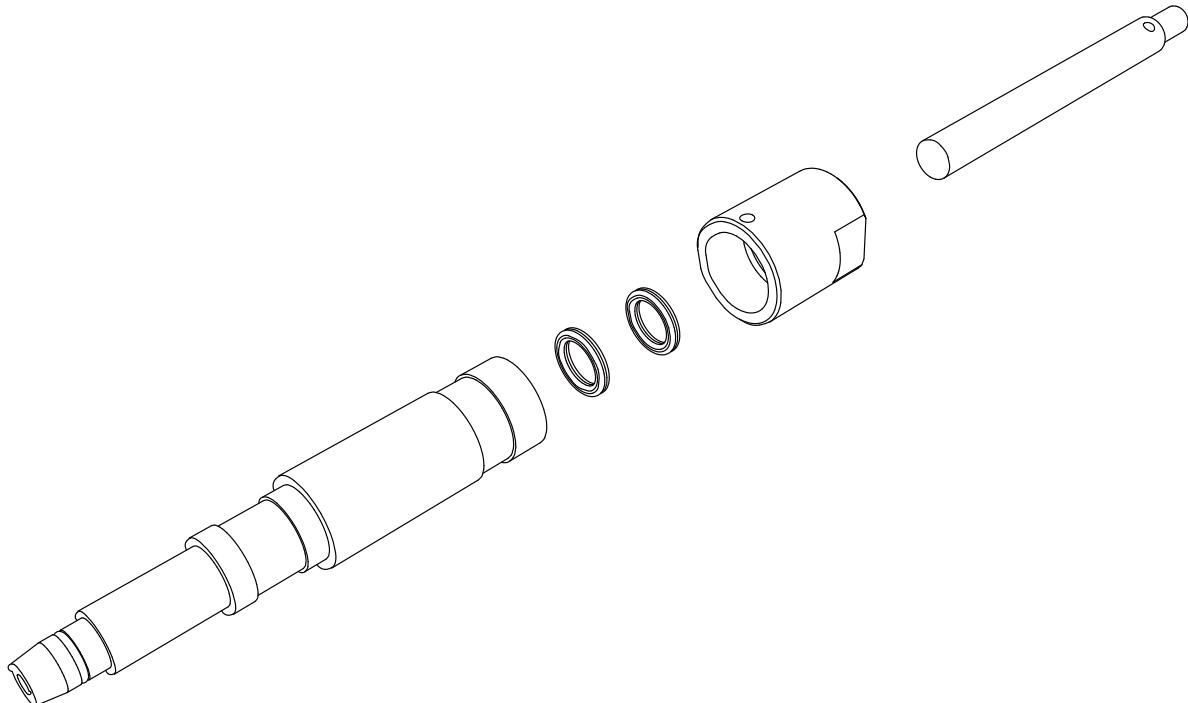
Equipment

Hex Wrench (1.5mm)

Silicon grease (recommended)

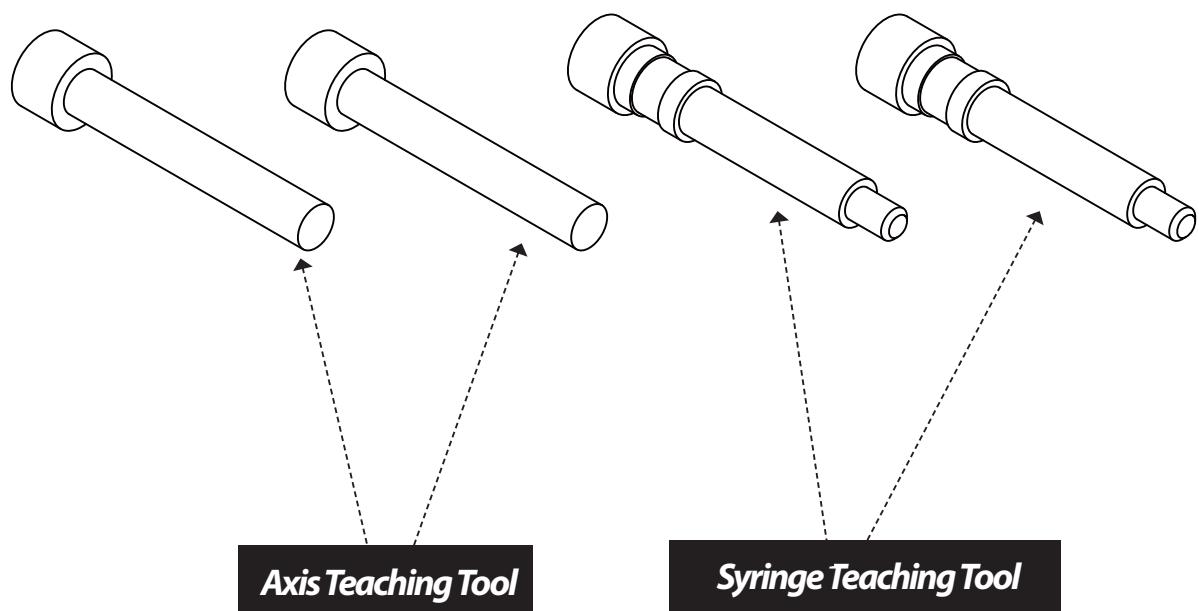
Procedure

- 1 Remove the Syringe Head by removing the Syringe Head Fixing Screw and rotating
- 2 Replace the new Syringe O Rings in the Single Syringe.
Reassemble in inverse order.



5 Regulate

5.1 Teaching Tools Set



5.2 Procedures before Calibration

Step 1

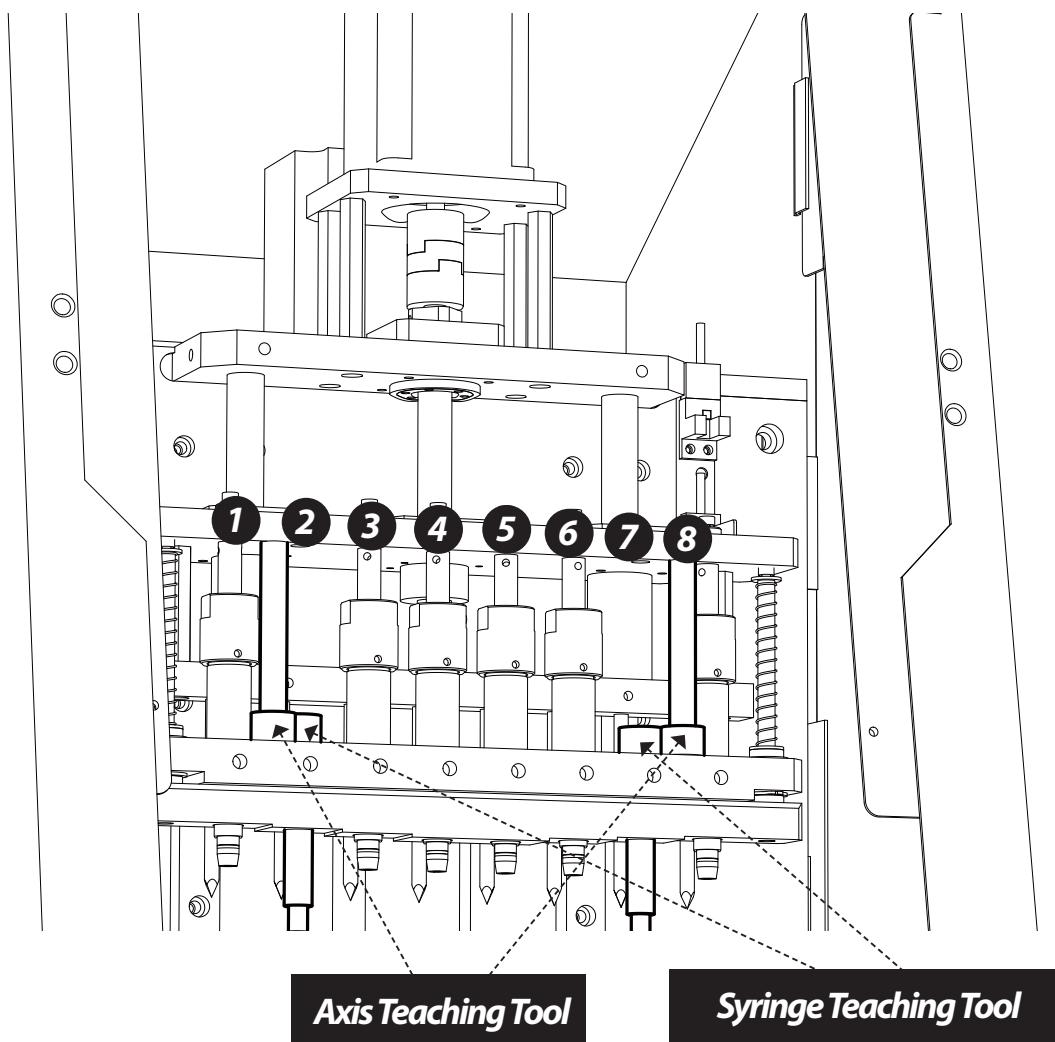
Remove #2 and #15 Syringe by removing the Syringes' top Fixing Screws and Front side Fixing Screws.

Replaced with two Syringe Teaching Tools at both ends (#2 & #15).

Note: Use Hex Wrench (3mm)

Place Axis Teaching Tools between #3 and #4, as well as #13 and #14

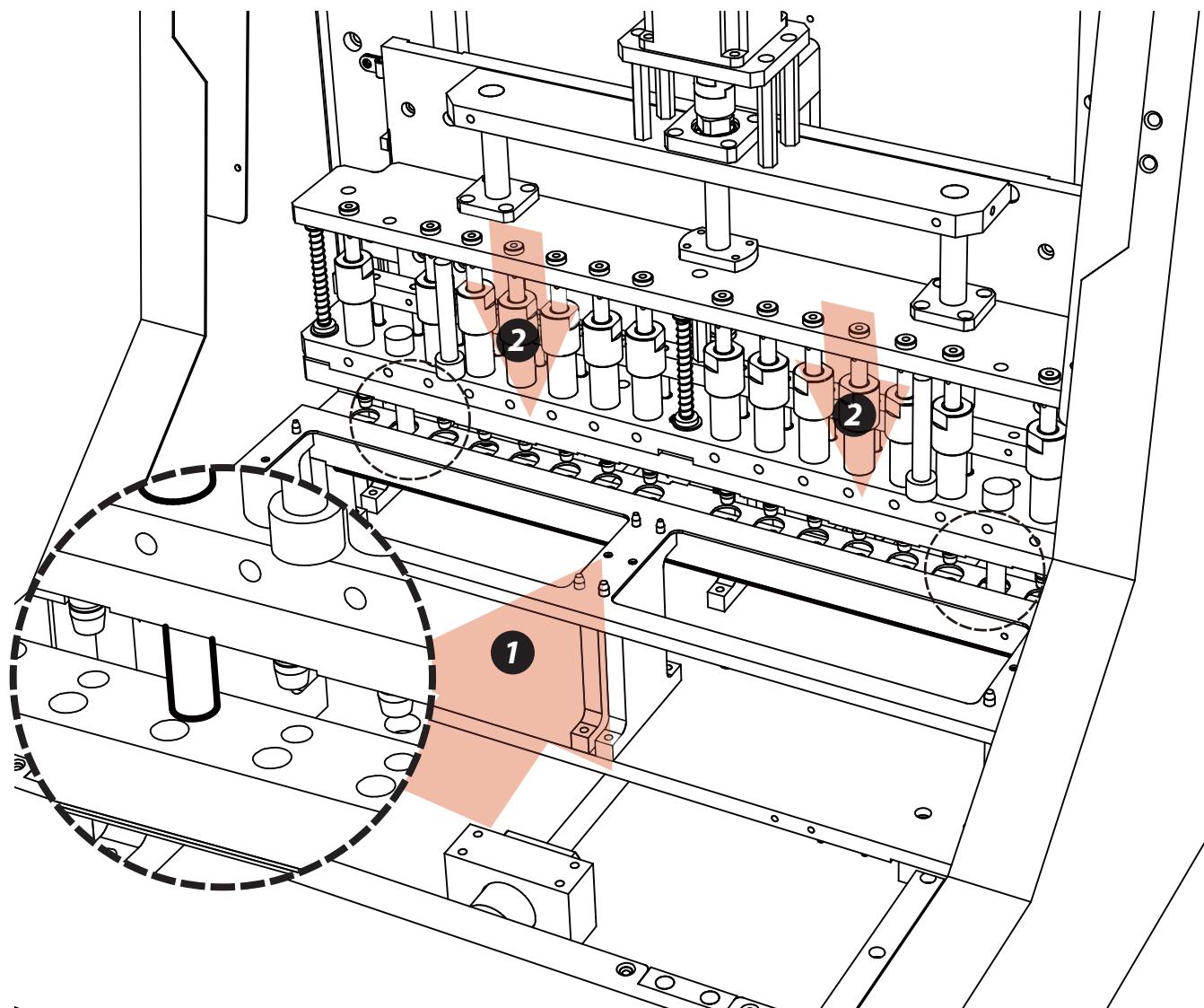
Go to step 4 for input original factory setup or Axis Value.



Next Step

Step 2

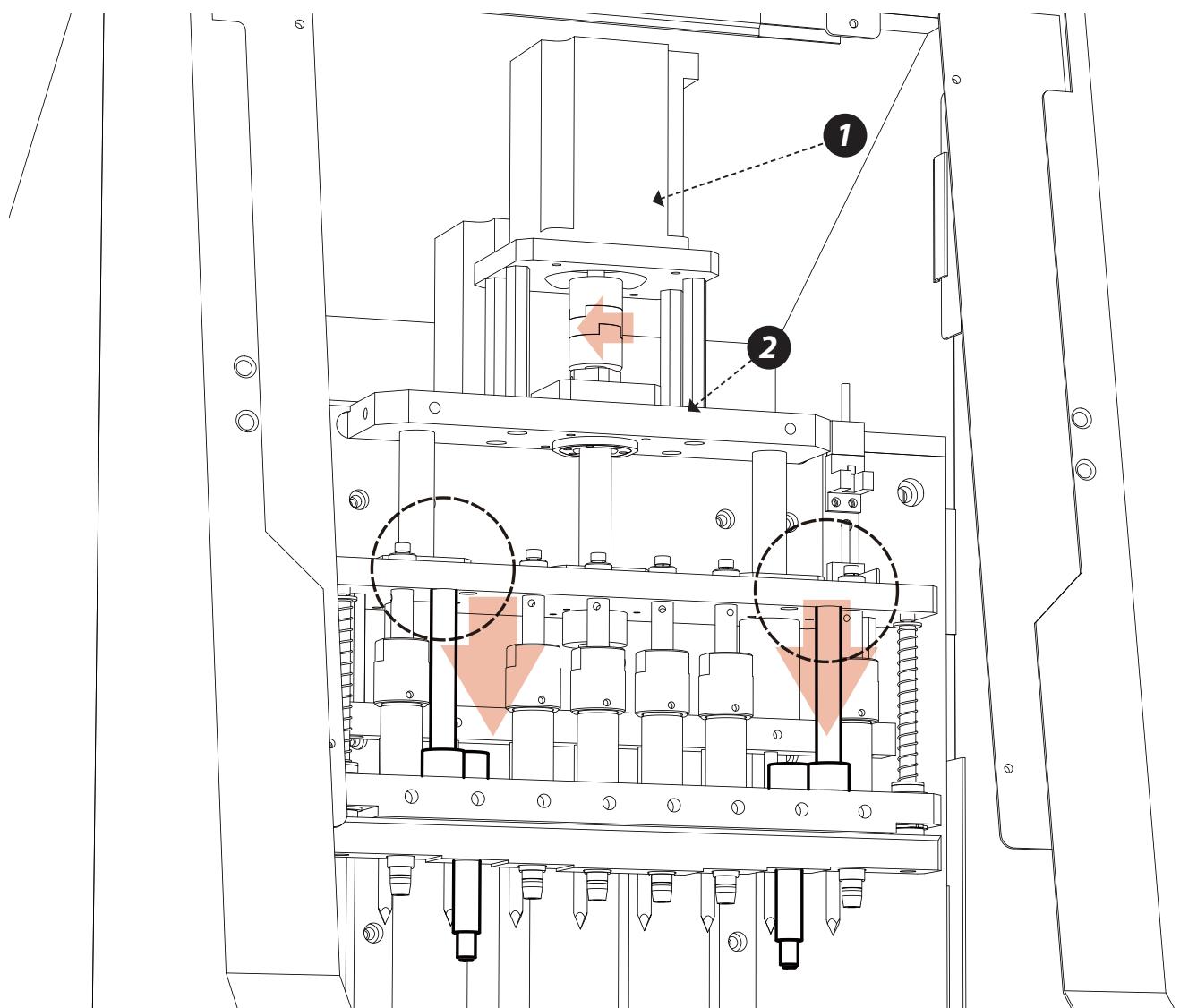
- 1 Push in the Tip holder unit to the end.
- 2 Push down Y Axis till the Syringe Teachint Tool fixed and Stand into the Elution Heating Wells.



Next Step

Step 3

Rotate V Axis motor connector to push down Syringes block until firmly fixed with Axis Teaching Tools



Next Step

Step 4

1 Place 4 Teaching Tools in position before perform calibration

Turn on power switch and Press Shift Key



Select 3 SENSOR



(1) Edit Stored Data

Select <1> for input Asix Value.

(2) Check By Tools (Continue last page)

Select <2> for calibration.

Press Enter Key to input new value



This step is for input original parameter form "Teaching data sheet" or calibrated Axis value after Replace of CUP board.

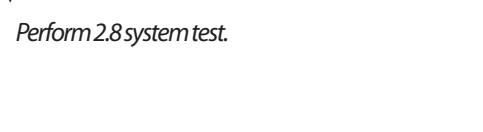
Calibrated Asix value can be acquired by <2> check by Tools.



EchoXXXX stands for one Asix value.



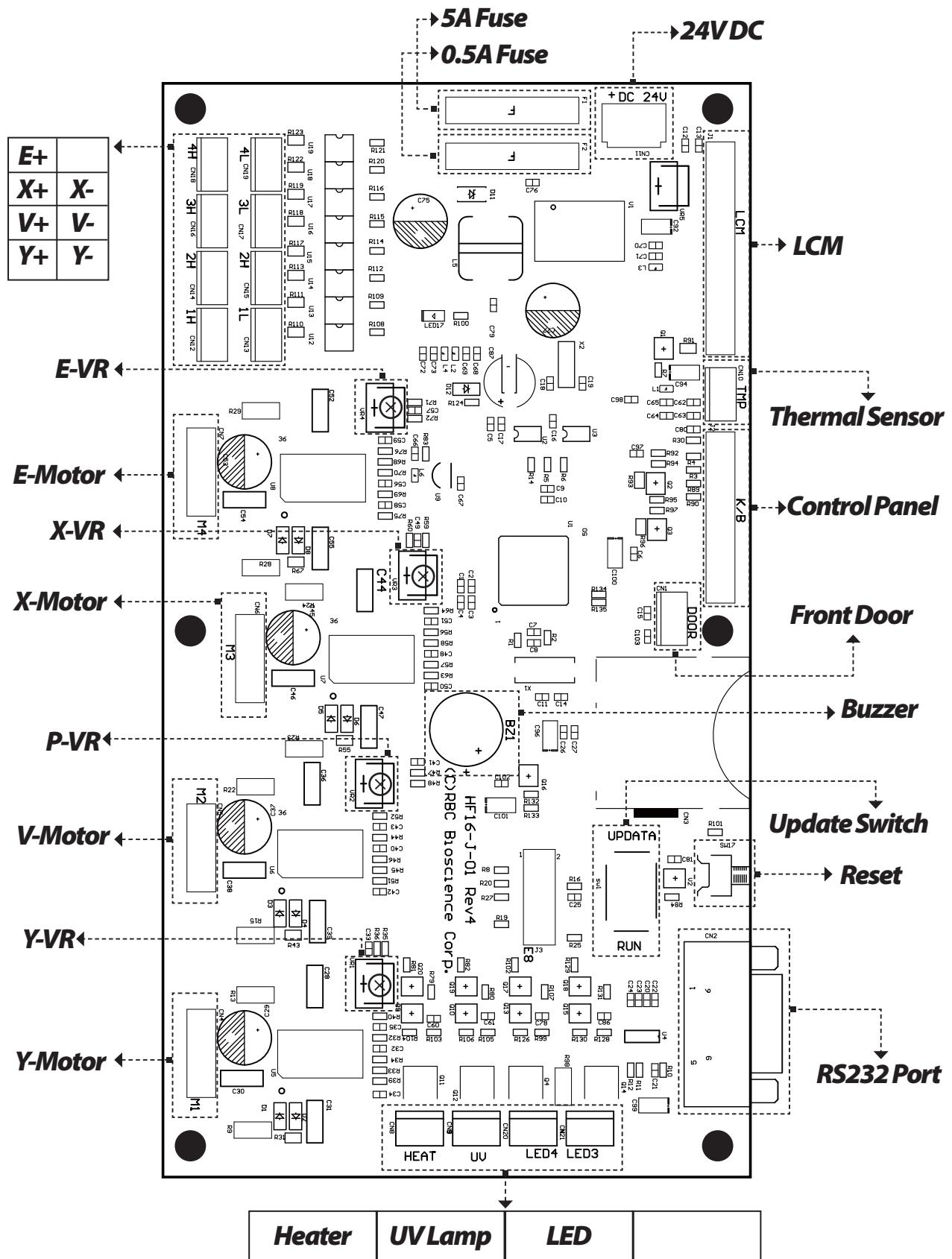
Record the Asix Value on your service manual.



Perform 2.8 system test.

6. CPU Board And Power Supply Switch

6.1 CPU Board



6.1.1 Replacing CPU Board

The Service Lid needs to be removed in advance, before replacing the CPU Board.

When removing the Service Lid refer to "4.1.1 Removing Service Lid" and follow the instructions below.

Equipment

Hex Wrench (2.5mm)

Procedure

Disconnect the seven IO Connectors from the CPU Board.

Disconnect the four Axis Connectors from the CPU Board.

Disconnect the three Power Distribution Connectors from the CPU Board.

Disconnect the DClink input Connector from the CPU Board.

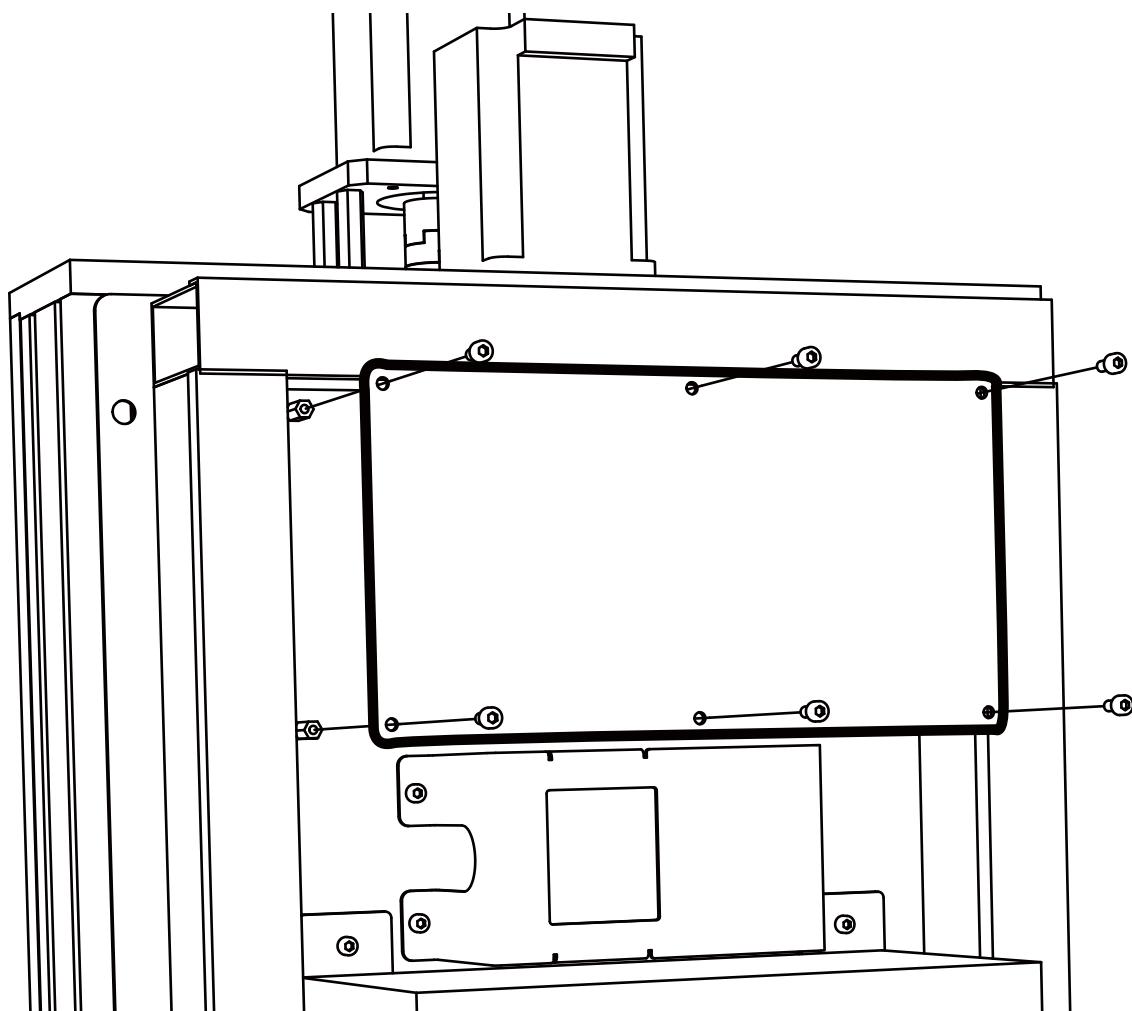
Disconnect the Front Door Safety Switch Connector from the CPU Board.

Disconnect the two Operation Panel Connectors from the CPU Board.

Remove the six CPU Board Fixing Screws.

Reassemble the new CPU Board in the inverse order.

Perform 5. Regulate steps.



6.2 Replacing Power supply switch

The Service Lid needs to be removed in advance, before replacing the Power supply switch.

When removing the Service Lid refer to "4.1.1 Removing Service Lid" and follow the instructions below.

Equipment

Phillips Screwdriver (#2)

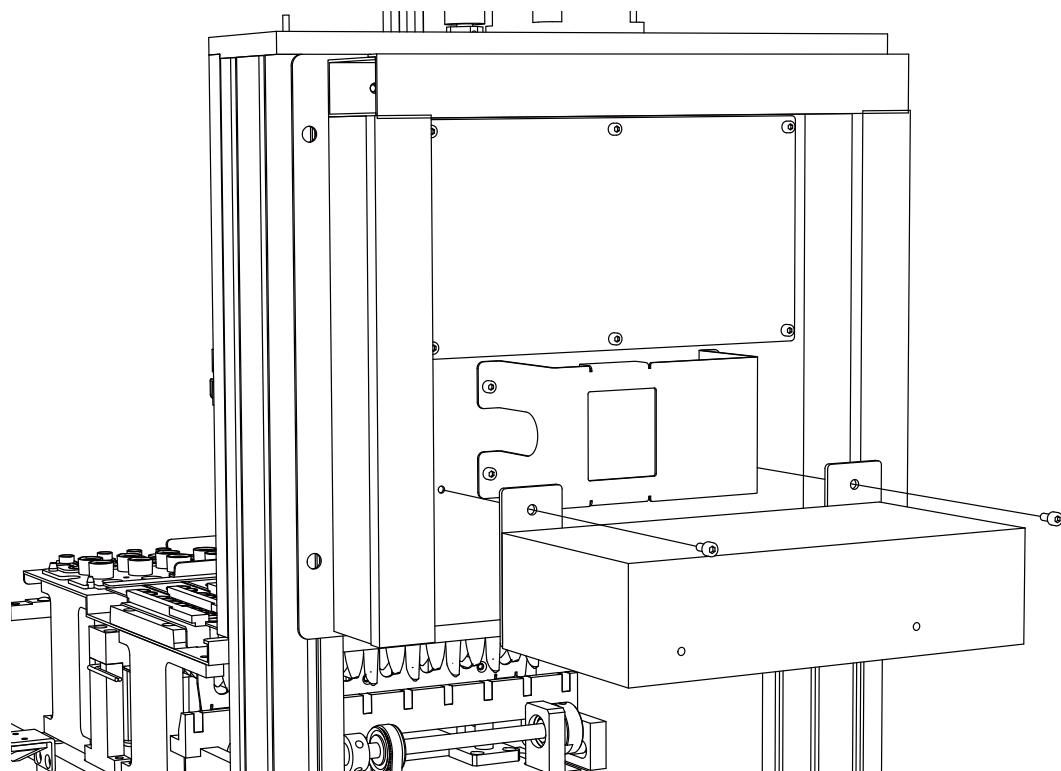
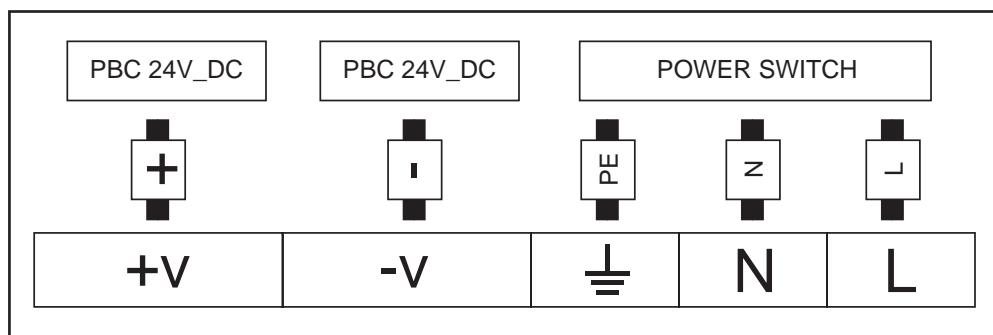
Procedure

Disconnect the AC Input Connector.

Remove the four power supply switch fixing screws.

Disconnect the AC Input Terminal and the DC Output Terminal.

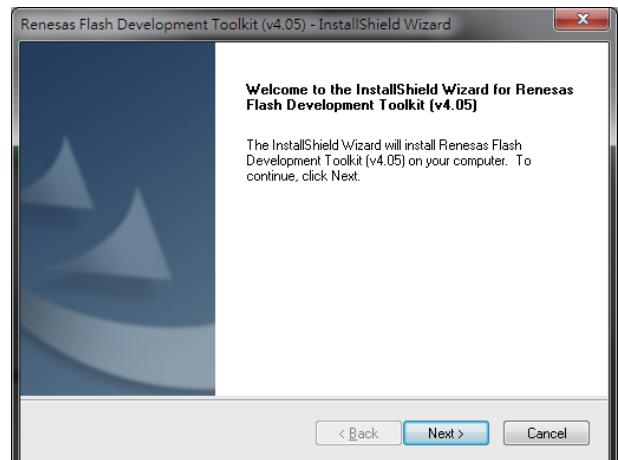
Reassemble the new power supply switch in the inverse order.



7 Update Software

7.1 Installing Update Software –RENESAS For Windows

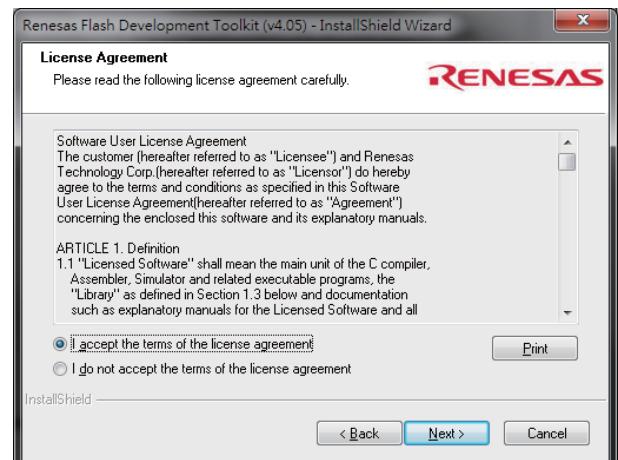
The InstallShield Wizard will open to help you, and press next.



You will be asked to choose your preferred language from the choices.

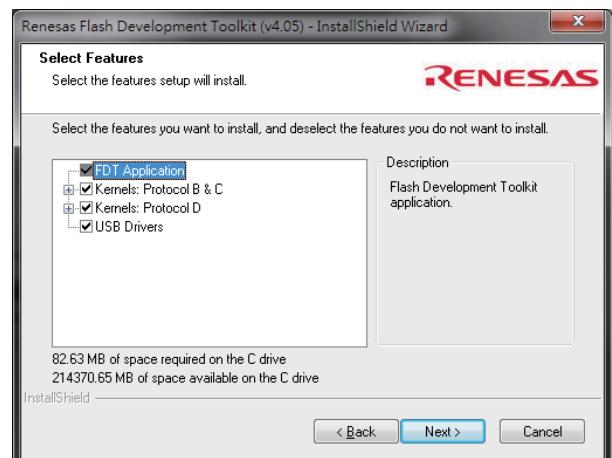


On the next screen, you will be asked to accept the terms of license agreement. Please check the box, and click next.

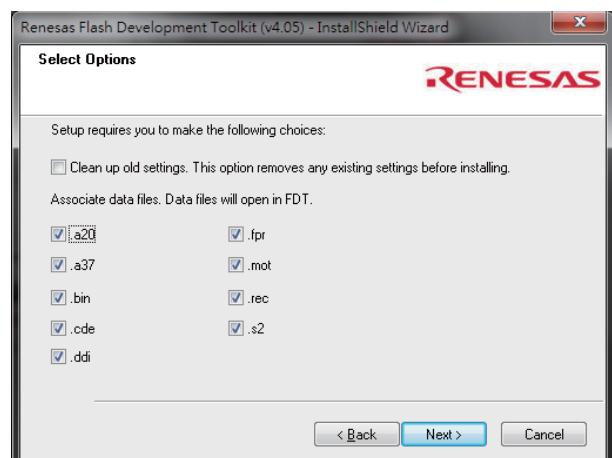


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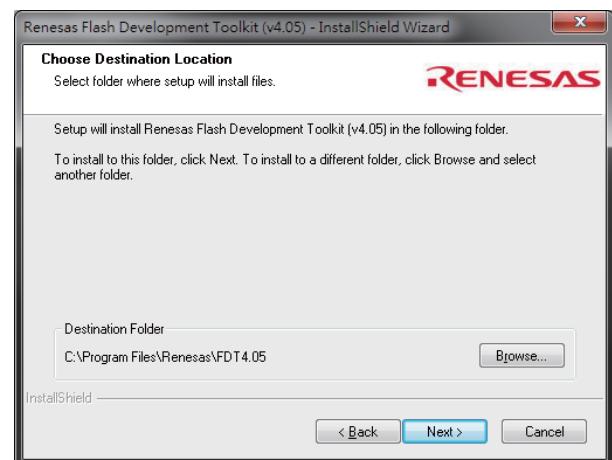
First, go to the folder where you saved the file. Double click the file to begin the installation of the Renesas Flash Development Toolkit.



This next window is to select options. Just ensure that all boxes are checked. You won't need to clean up the old settings, though. Click next.

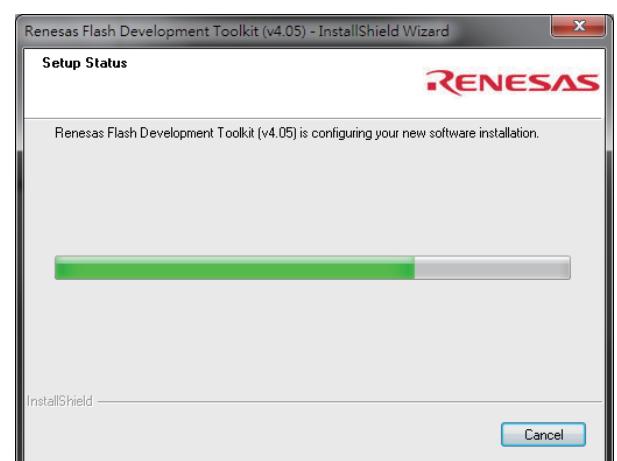
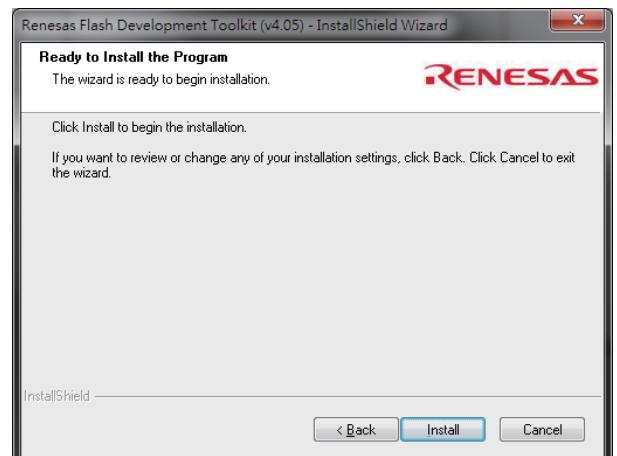


Now, select the destination for the file install. The wizard will automatically choose Program Files. If you wish to select another folder, use browse. Once that's done, click next.

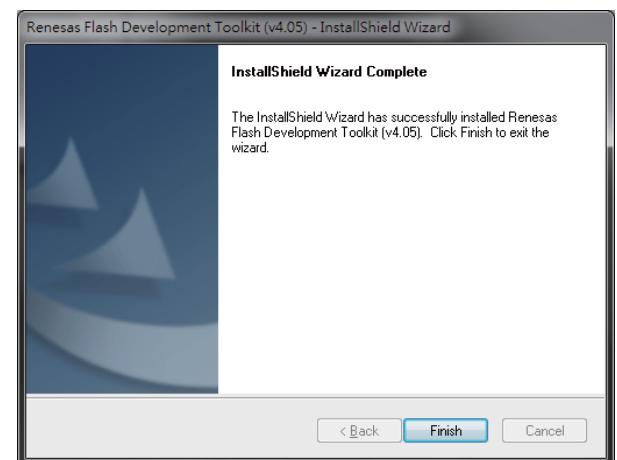


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It's ready to install, so click "Install".



Once the installation is completed, press Finish. This completes stage one.



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This next stage of the installation involves connecting the MagCore Compact System with your computer software, uploading data to the MagCore Compact System, and checking settings.

NOTE: Turn off machine power before this step.

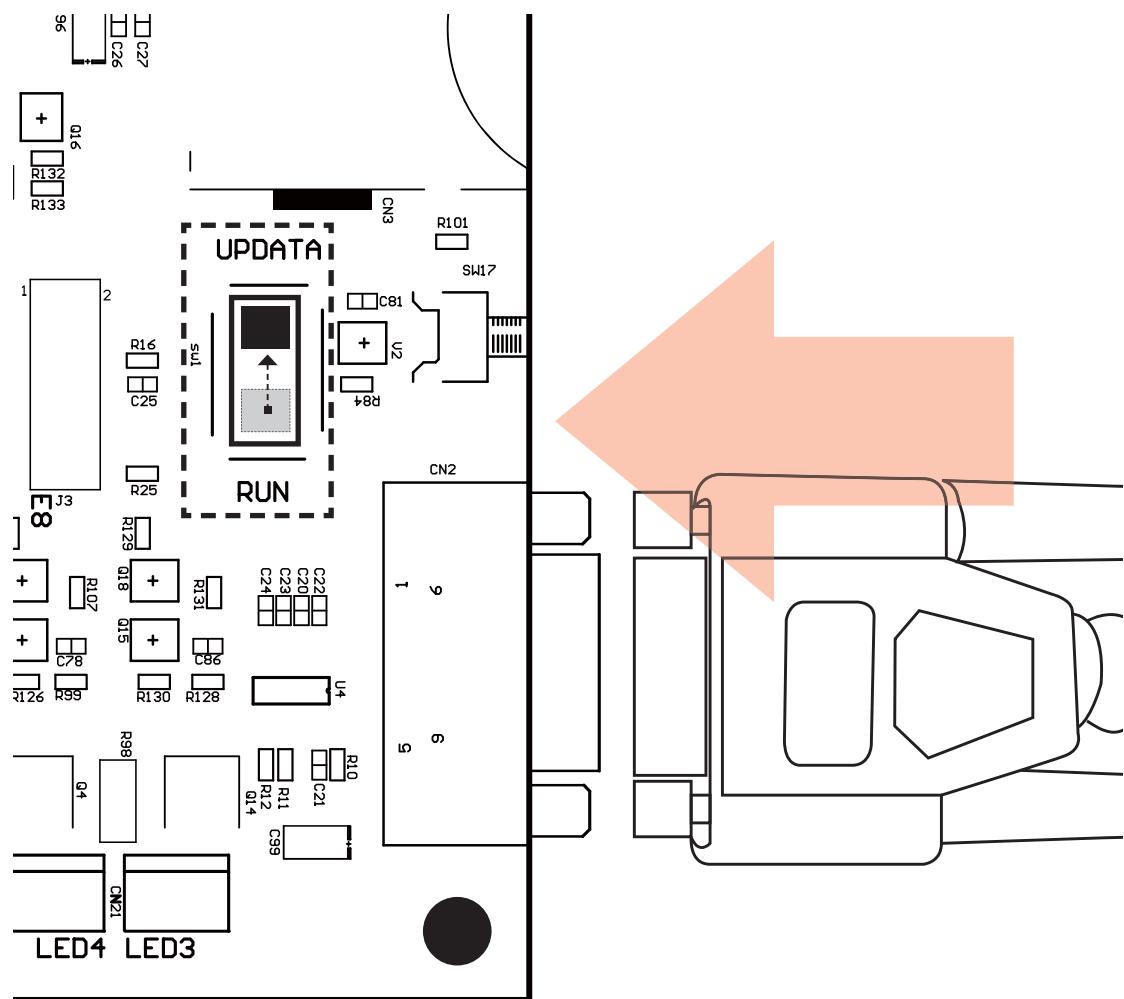
Remove the MagCore Compact back-panel, and move the "Protocol Updata" stick to the upper position. (UPDATA)

Now, connect the USB-RS232 plug with the extended RS232 cable line.

NOTE: You may need to install the USB-RS232 cable driver software to your PC first.

Thirdly, connect the extended cable line to the machine's RS232 port, and connect the other end to the PC's USB port.

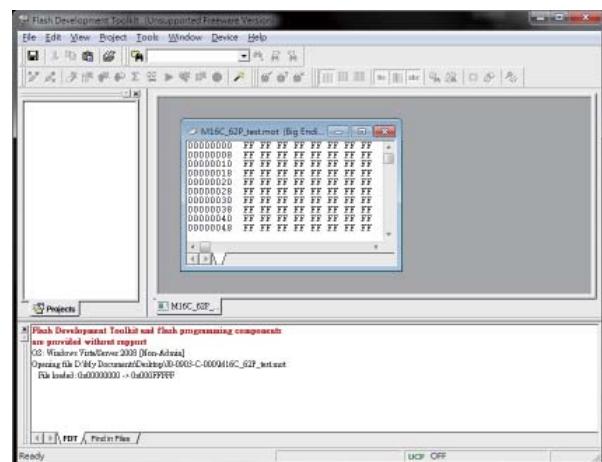
Turn On machine power.



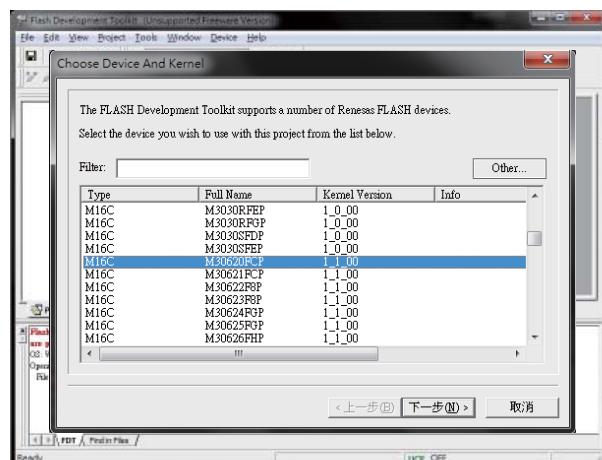
7.2 Update Protocol

Double click on the file RBC has provided for upgrading the MagCore Compact protocol. This will open the Flash Development Toolkit.

Next, click the pen with a light icon in the middle of the screen, called "Configure," to configure the flash project.



You will be asked to choose the device and kernel. Please select "**M16CM30620FCP**" then press next.

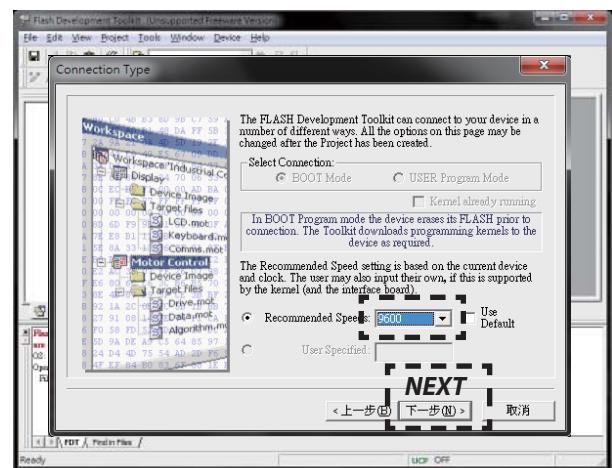


The next screen is the communication port. Use this page to select communicate port from your PC or laptop. Then click next.

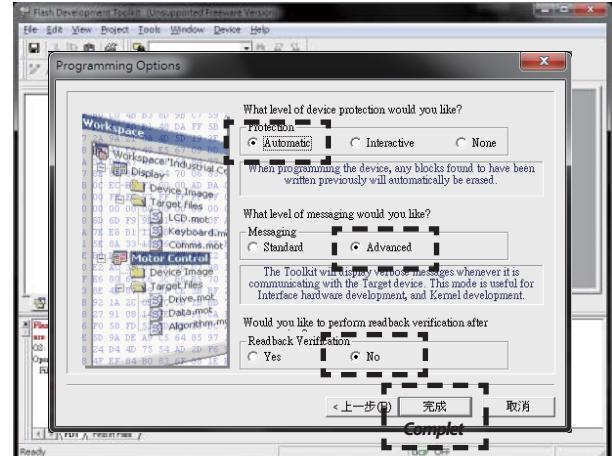


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For your connection type, uncheck "User Default" check box and select the recommended speed **9600**.



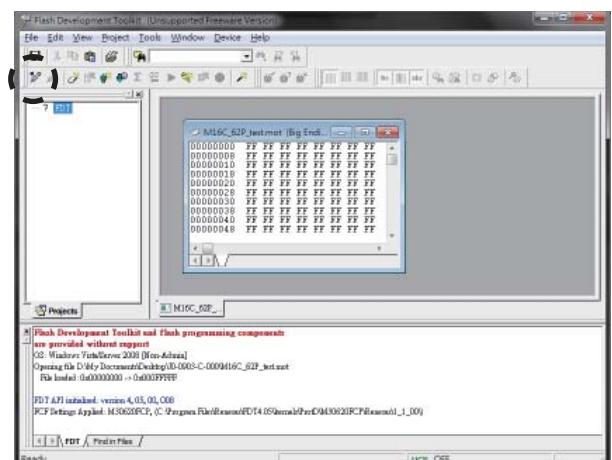
Now, select the protection system as
Protection **"Automatic"**
Messaging **"Advanced"**
Then press **"Complete"**
– which is the middle button.



Now, please turn on the MagCore Compact's power.

Back on the computer, press the
"FDT Connect" icon.

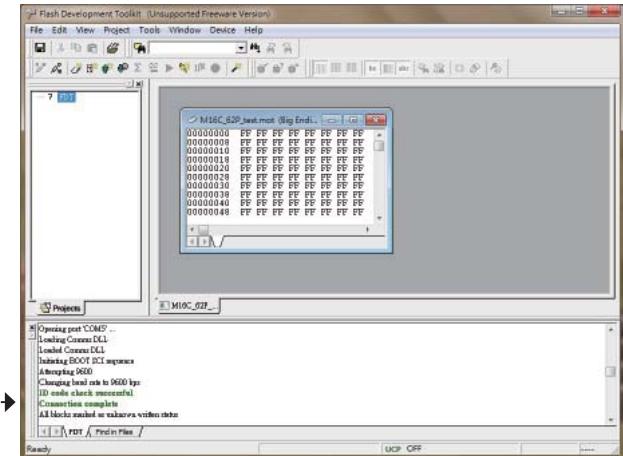
After doing this, your computer begins connecting to the
MagCore Compact microprocessor.



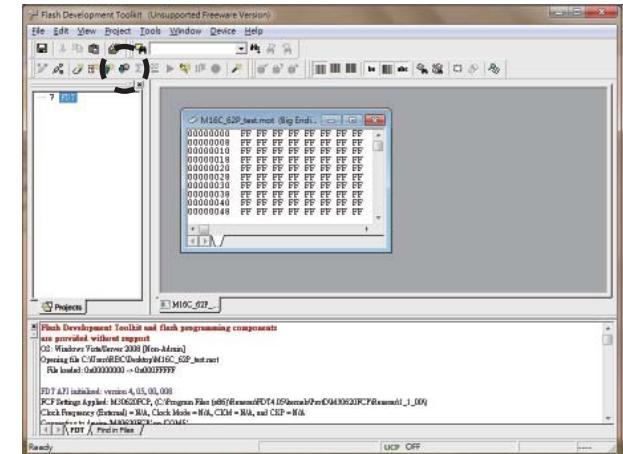
Next Page

The communication box at the bottom of the screen will show in green - "ID code check successful. Connection Complete."

If this information doesn't show up, check your RS232 cable line and run the above procedures again.

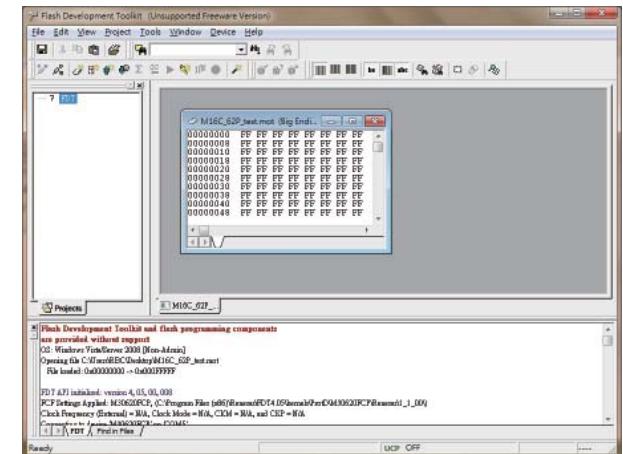


Next, select the "Download Active File" icon on the Toolkit.



The communication box at the bottom of the screen will show in green - "Image successfully written to device."

If this information doesn't show up, check your RS232 cable line and run the above procedures again, or contact RBC for a solution.

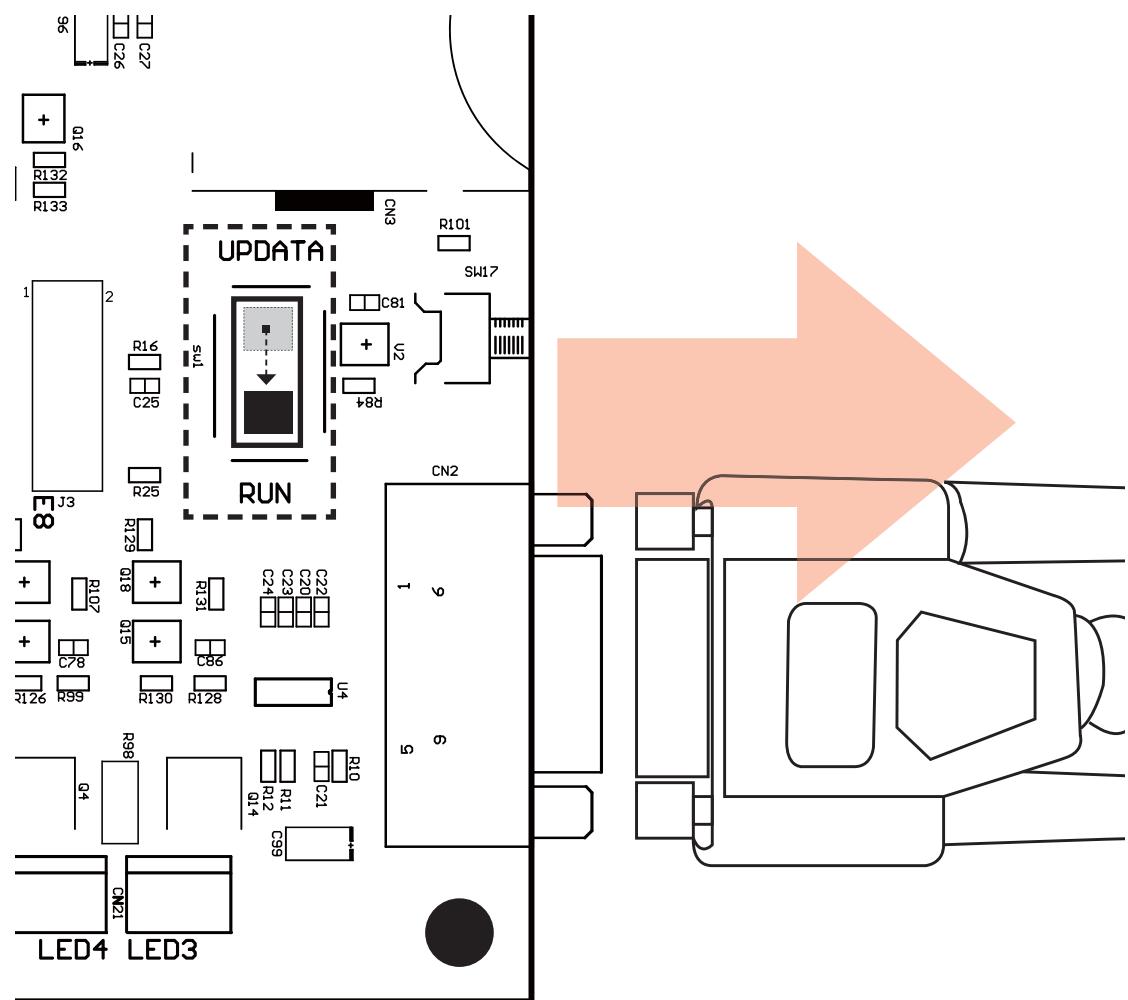


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Finally,

1. Turn off the MagCore power switch.
2. Move the "Protocol Updata" stick to the lower position. (RUN)
3. Disconnect the RS232 cable line.
4. Screw the back panel on again, and turn on the power. Your MagCore Compact System is ready for new protocol applications.

We hope these instructions have been clear and easy to follow. Thank you for choosing the MagCore Compact System, and please contact RBC if you have any further questions.



Trouble shooting Guide

Problem	Possible Cause	Recommendation
Drops of liquid on the Cartridge rack or the T-rack	Leakage of the tips due to damaged or worn O-rings in piston.	Please refer to the System Test, and check the liquid level of each columns are at same horizontal.
Pipetting of wrong liquid volumes	1. Head of tip might be bent. 2. Worn piston O-rings 3. Reagents were stored too long.	1. Check the Tip head. 2. Please refer to the System Test, and check the liquid level of each columns are at same horizontal.
Liquid level up to tip filter	1. Wrong sample materials 2. Wrong sample tubes.	1. Please refer to the MagCore® kit manual. 2. Please use provided sample tubes.
No piercing	Vmotor or connector is not working properly.	Restart system. If problem persists, contact Technical Service.
LCM panel disappeared	PCB board or connector is not working properly	Contact Technical Service.
Axis no movement	Motor or connector is not working properly.	Restart system. If problem persists, contact Technical Service.
Tip Holder jammed	1. The holder might be bent. 2. Nozzle Heads is not correctly position.	1. Press the STOP button immediately, and replacing the new Tip and Holder. 2. Contact Technical Service.

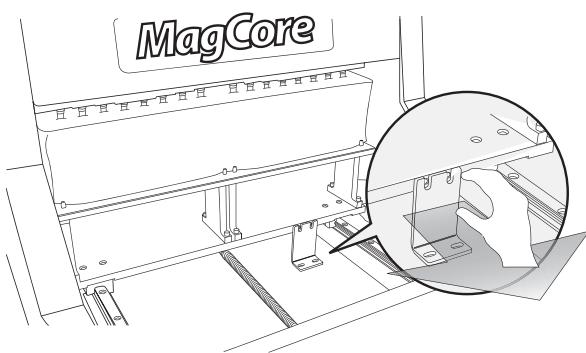
Attachment



TEL: +886-2-8912-1200
FAX: +886-2-8912-1300
3F, No.132, Lane 235, Baoqiao Rd., Xindian City,
Taipei County 23145, Taiwan.

<http://www.rbcbioscience.com>

Install

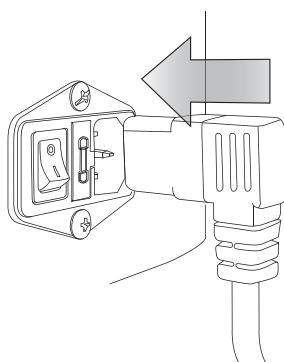


Proceed installation procedures after placing on a solid bench-top.

Open the front door and use philip screw driver to loose and take out the L-Block.



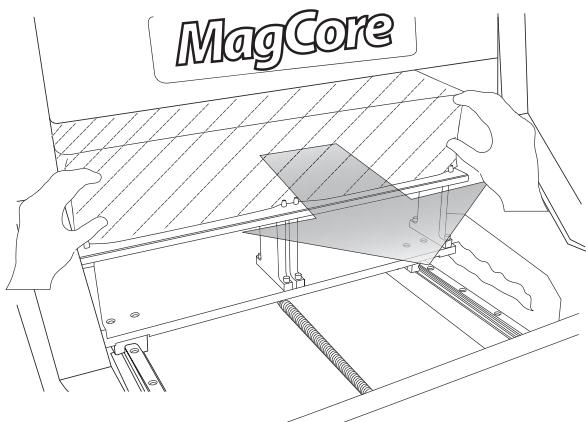
Please retain the L-Block and screws, to relocate for future move process or to fixed machine.



Confirm the outlet voltage is **100v** to **240v** Keep hands dry and make sure that the machine remain switch-off while insert into the socket then turn on the powerswitch.

Connect power socket and turn on the power.

Remove bump buffer



After power on, LCM shows "**STAND-BY**", then press Shift for FUNCTION menu



Select (2) PISTON, machine will retreat bump buffer automatically.



Press ECS twice to go back to STAND-BY menu. Complete install procedures.

Repack bump buffer

1. Plug in power cable, then turn on powerswitch.
2. Push back the plateform back (without T-rack and cartridge rack) to position where L-Block can be fixed.
3. Use Philip screw drive to fix 4 screws to L-Block.
4. Place the bump buffer on the cartridge plateform
5. Pull down the Syringe plateform to secure bump buffer.
6. Turn off power.